



MassDEP RTN 3-23246

Partial Permanent Solution Statement for 103 Washington Street

50 Tufts Street, Somerville, Massachusetts

Submitted to:

Massachusetts Department of Environmental Protection
Northeast Regional Office
150 Presidential Way
Woburn, MA 01801

Submitted by:

GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801
781.721.4000

June 12, 2025

Project No. 045163



Molly E. Forrest
Project Manager

Ileen S. Gladstone, P.E., LSP
Senior Vice President

Table of Contents

Executive Summary	v
1. Introduction.....	1
1.1. Purpose	2
1.2. Scope	2
1.3. Submittals	2
1.4. Public Record	2
1.5. Contact Information	3
1.6. Conceptual Site Model	3
1.6.1. Property Location and Description	3
1.6.2. Contaminant Distribution	4
1.6.3. Site Conditions	4
1.6.4. Receptors and Potential Exposure Pathways	5
1.6.5. Ecological Exposure Potential	5
2. General Property Information	6
2.1. Property and 50 Tufts Street Location and Description	6
2.1.1. 103 Washington Street	6
2.1.2. 50 Tufts Street	6
2.2. Natural Resource Areas	7
2.3. Disposal Site Map	7
3. Property Investigations: IES.....	8
3.1. ASTM Phase I Environmental Site Assessment	8
3.1.1. Release Abatement Measure – IES, September to October 2017	8
4. Property Investigations: GEI	10
4.1. Groundwater Sampling	10
4.2. Soil Sampling	11
4.3. Sub-Slab Soil Vapor Sampling	12
4.4. Indoor Air Sampling	13
4.5. Basement Sump Sampling –May 2023	13
6. Evaluation of Vapor Intrusion Pathway	16
6.1. Future Vapor Intrusion Potential	16
7. Method 3 Risk Characterization	18
7.1. Current and Reasonably Foreseeable Activities and Use	18
7.2. Potential Human Receptors	18

7.2.1.	Future Construction Worker	19
7.2.2.	Current/Future Emergency Utility Worker	19
7.2.3.	Current/Future Hypothetical Resident	19
7.2.4.	Receptors Not Quantitatively Evaluated	20
7.3.	Potential Environmental Receptors	20
7.4.	Chemical Data Used in the Risk Characterization	20
7.4.1.	Soil	21
7.4.2.	Groundwater	21
7.4.3.	Sub-Slab Soil Vapor	21
7.4.4.	Indoor Air	22
7.4.5.	Hot Spot Evaluation	22
7.5.	Contaminants of Concern (COCs)	22
7.5.1.	Soil COC Selection	22
7.5.2.	Groundwater COC Selection	23
7.5.3.	Indoor Air COC Selection	23
7.6.	Soil and Groundwater Categories	23
7.6.1.	Soil Categories	23
7.6.2.	Groundwater Categories	24
7.7.	Identification of EPCs	24
7.7.1.	Soil EPCs	24
7.7.2.	Fugitive Dust EPCs	24
7.7.3.	Groundwater EPCs	25
7.7.4.	Excavation Air EPCs	25
7.7.5.	Indoor Air EPCs	26
7.8.	Method 3 Characterization of Risk to Human Health	26
7.8.1.	Comparison to Applicable or Suitably Analogous Standards	26
7.9.	Risk of Harm to Safety	26
7.9.1.	Risk of Harm to Public Welfare	27
7.9.2.	Risk of Harm to the Environment	28
7.10.	Conclusions	28
8.	Representativeness Evaluation and Data Usability Assessment.....	29
8.1.	Conceptual Site Model	29
8.2.	Field and Screening Data	29
8.3.	Sampling Rationale, Distribution, and Data Completeness	29
8.3.1.	Soil	29
8.3.2.	Groundwater	30
8.3.3.	Soil Vapor	30
8.3.4.	Indoor Air	30
8.3.5.	Data Completeness	30

8.4.	Data Usability Assessment	30
8.5.	Data Usability Criteria	31
8.6.	Statement of Suitability	31
9.	Partial Permanent Solution Statement.....	32
9.1.	Source Elimination or Control (310 CMR 40.1040(1)(b))	32
9.2.	Migration Control (310 CMR 40.1040(1)(c))	32
9.3.	Non-Aqueous Phase Liquid (310 CMR 40.1040(1)(d))	32
9.4.	Feasibility of Achieving or Approaching Background	32
9.5.	Operation, Maintenance, and/or Monitoring	33
9.6.	Greener Cleanups	33
9.7.	Impacts of Climate Change on Site	33
9.7.1.	Precipitation	34
9.7.2.	Sea Level Rise	34
9.7.3.	Temperature	34
9.7.4.	Extreme Weather	35
10.	Limitations	36
11.	References	37

Tables

Table 1	IES Chemical Testing Results - Soil
Table 2	Chemical Testing Data – IES Groundwater Sampling
Table 3	Chemical Testing Data – GEI Groundwater Sampling
Table 4	Groundwater Elevations
Table 5	Chemical Testing Data – GEI Subsurface Soil
Table 6	Chemical Testing Results - Sub-Slab Soil Gas
Table 7	Chemical Testing Data – Indoor Air
Table 8	Chemical Testing Results - Sump Water
Table 9	Summary Statistics for Soil
Table 10	Summary Statistics for Groundwater
Table 11	Sub-Slab Soil Vapor Data Summary Statistics
Table 12	Indoor Air Data Summary Statistics
Table 13	Indoor Air Exposure Point Concentration Summary

Figures

Figure 1	Site Location Map
Figure 2	103 Washington Street Portion of Disposal Site Subject to Partial Permanent Solution
Figure 3	MassGIS Map
Figure 4	Groundwater Elevation Contour Plan (April 2024)
Figure 5	103 Washington Street Indoor Ambient Air Samples and Soil Vapor Samples Locations

Appendices

Appendix A	BWSC Forms
Appendix B	Public Notice Letters
Appendix C	Permanent Solution Statement (RTN 3-34310)
Appendix D	GEI Laboratory Data
Appendix E	Method 3 Risk Characterization

MEF/AC/ISG:bdp

B:\Private\04516\19.0 Reports in Progress\19.10 Partial RAOs\Wave 2-VI at NSR\Washington Street\103 Washington Street\50 Tufts Street PPSS 103
Washington_2025-06-12.docx

Executive Summary

On behalf of UniFirst Corporation (UniFirst) of Wilmington, Massachusetts, GEI Consultants, Inc. (GEI) prepared this Partial Permanent Solution Statement for 103 Washington Street, Somerville, Massachusetts (the Property), which is a portion of the 50 Tufts Street site (the Site; Figure 1). The Site is identified by Massachusetts Department of Environmental Protection (MassDEP) Release Tracking Number (RTN) 3-23246. The Site Map (Figure 2) shows the Property in relation to the Site boundary. This document provides closure for a portion of the Site under the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000) and indicates that a condition of No Significant Risk (NSR) exists at the Property.

A release of chlorinated volatile organic compounds (VOCs) to soil and groundwater at the Site was first reported to the MassDEP in 2002. Subsequent investigations at the Site identified chlorinated VOCs, particularly tetrachloroethylene (also called perchloroethylene [PCE]), in indoor air at 50 Tufts Street, and in groundwater and indoor air at residential and commercial properties near 50 Tufts Street. The Property is within the Site boundary estimated as the area within which groundwater concentrations of PCE exceed the Method 1 GW 2 standard.

The Property at 103 Washington Street, was formerly occupied by an automobile repair shop, which was demolished around March 2019. On May 30, 2017, Wash Dev LLC (the former owner of the Property) submitted a Release Notification Form (RNF) for the presence of petroleum hydrocarbons in soil. The release was assigned RTN 3-34310. The contamination was addressed under a Release Abatement Measure (RAM) Plan and closed in December 2017.

The Property has been redeveloped as a mixed-use development with commercial space and open-air parking on the first floor and residential units above. As of February 2024, construction is complete, and the building is occupied. GEI has conducted indoor air and sub-slab soil vapor sampling in May 2023, July 2023, March 2024, December 2024 and February 2025.

A Partial Permanent Solution Statement, based on a Method 3 Risk Characterization, is appropriate for the Property based on the following:

- **No Significant Risk:** A condition of NSR to human health, safety, public welfare, and the environment exists for all receptors with No Conditions at the Property, and no remedial actions are required.
- **Source Elimination and Control:** There are no unpermitted releases of oil or hazardous material (OHM) at the Site, and the sources of OHM at the Site are eliminated to the extent feasible and are controlled.
- **Migration Control:** The groundwater and soil vapor plumes at the Site are stable.
- **Non-Aqueous Phase Liquid (NAPL):** Visible NAPL has not been observed at the Site, and any Dense Non-Aqueous Phase Liquid (DNAPL) that may be present at the Site is not migrating and exists in a stable configuration. The Phase III for the Site demonstrated that it is not feasible to eliminate DNAPL.

- An Activity and Use Limitation (AUL) is not required to maintain a condition of NSR at the Property.

1. Introduction

On behalf of UniFirst Corporation (UniFirst) of Wilmington, Massachusetts, GEI Consultants, Inc. prepared this Partial Permanent Solution Statement for 103 Washington Street, Somerville, Massachusetts (the Property), which is a portion of the 50 Tufts Street site (the Site; Figure 1). The Site includes 50 Tufts Street, surrounding residential and commercial properties to the east and immediately west of 50 Tufts Street, and the Michael E. Capuano Early Childhood Center (Capuano Center). The Site Map (Figure 2) shows the Property in relation to the Site boundary. Chlorinated volatile organic compounds (VOCs), particularly tetrachloroethylene (also called perchloroethylene [PCE]), have been detected in soil, groundwater (shallow and deep overburden, and bedrock), soil vapor, and indoor air at portions of the Site.

This document provides closure for the Property, which is a portion of the Site under the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000) and indicates that a condition of No Significant Risk (NSR) exists at the Property.

The Site is identified by Massachusetts Department of Environmental Protection (MassDEP) Release Tracking Number (RTN) 3-23246 which was assigned following notification of a release of chlorinated VOCs to soil and groundwater at 50 Tufts Street in 2002. In October 2004, the concentration of total VOCs in two wells located within 30 feet of residences triggered a MCP 72-hour reporting requirement in accordance with 310 CMR 40.0313(4) and (5). MassDEP assigned RTN 3-24376 to the release and issued a Notice of Responsibility (NOR) to conduct an Immediate Response Action (IRA) to evaluate the potential for a CEP and/or a Condition of Substantial Release Migration (SRM). RTN 3-24736 along with the additional RTNs 3-24358 and 3-26114 associated with the Site were linked to RTN 3-23246, and all response actions, including at the properties downgradient of 50 Tufts Street, are being conducted as part of the Response Actions for the primary Site.

The Site is currently classified as Tier II. The “Phase II Comprehensive Site Assessment, Method 3 Risk Characterization, and Phase III Remedial Action Plan,” (Phase II/III) for the Site was submitted to MassDEP on July 14, 2008. The “Phase IV Remedy Implementation Plan,” (Phase IV) was submitted to MassDEP on August 10, 2009. The “Immediate Response Action Completion Report and Remedial Monitoring Report No. 11,” (IRAC Report) was submitted to MassDEP on November 13, 2009, and the “Immediate Response Action Completion Report Addendum,” was submitted to MassDEP on April 1, 2011. The “Phase IV Final Inspection Report, Remedial Monitoring Report No. 15, and Phase V Remedy Operation Status Report,” was submitted to MassDEP on August 4, 2011. In a Notice of Audit Finding dated December 12, 2024, MassDEP terminated ROS and returned the Site to Phase V. GEI continues to submit semiannual Phase V Status Reports for the Site. The most recent Status Report was submitted to MassDEP on February 11, 2025.

1.1. Purpose

The purpose of this Partial Permanent Solution Statement, in accordance with the requirements of the MCP, is to document that a Permanent Solution has been achieved for the Property, which is a portion of the Site.

1.2. Scope

The scope of this Partial Permanent Solution Statement for the Property is to:

- Document the soil vapor and indoor air testing conducted at the Property.
- Provide a summary of the environmental conditions.
- Evaluate the risk to human health, safety, public welfare, and the environment at the Property.
- Demonstrate that the applicable requirements for a Permanent Solution have been achieved.

1.3. Submittals

The original MassDEP transmittal form (BWSC 104) was submitted online via eDEP and a copy is included in Appendix A. As required by the MCP (310 CMR 40.1403(3)(f)), GEI submitted letters to the Somerville Chief Municipal Officer and the Board of Health notifying them of the availability of this Partial Permanent Solution Statement. Copies of the notification letters are in Appendix B.

GEI also provided a copy of the Permanent Solution to the owner of the Property. The transmittal letter including the MassDEP transmittal form (BWSC-122) is also in Appendix B.

1.4. Public Record

Documents related to the environmental investigations conducted at the Site are on file with the MassDEP Northeast Regional Office located at 150 Presidential Way in Woburn, Massachusetts. Records are accessible online at the MassDEP Searchable Sites database (<https://eeaonline.eea.state.ma.us/portal#!/search/wastesite>).

The Somerville Public Library has made documents available on the Internet Archive: (<https://archive.org/details/somervillepubliclibrary?tab=collection&query=GEI+Consultants&sort=-date>) .

1.5. Contact Information

Entity Undertaking Response Actions

UniFirst Corporation
68 Jonspin Road
Wilmington, MA 01887

Contact Person

Catherine Malagrida, P.G.
Environmental Compliance Manager
UniFirst Corporation
68 Jonspin Road
Wilmington, MA 01887
978-658-8888 ext. 0587

Licensed Site Professional (LSP)

Ileen S. Gladstone, P.E., LSP, LEED AP
Senior Vice President
GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801
781-721-4012
LSP License: 9719

1.6. Conceptual Site Model

GEI developed this Conceptual Site Model (CSM) to describe release mechanisms, contaminant distribution, and potential exposure pathways associated with the Property. The CSM is based upon the investigation data documented in the Phase II/III and IRAC Report. Site features associated with the CSM are shown in Figure 2.

1.6.1. Property Location and Description

The Property is within the Site boundary associated with a release of chlorinated VOCs to soil and groundwater at 50 Tufts Street, approximately 510 feet (ft) west of the Property. The Property is in a commercial/residential zoning district, fronts residences to the north, a new multi-family apartment building to the west, residential and commercial properties to the east, and Washington Street to the south.

The Property at 103 Washington Street was formerly an automobile repair shop. The Property was developed with a one-story, masonry and wood building, constructed in approximately 1920 on a concrete slab without a basement. Based on soil vapor sampling conducted by GEI, a sub-slab depressurization system (SSDS), classified as an active exposure pathway mitigation measure (AEPMM), was installed at the Property in 2007. The building was vacated in May 2017 and the AEPMM was deactivated. The building was demolished around March 2019.

The Property has been redeveloped as an approximately 3,500 square foot mixed-use development with commercial space and open-air parking on the first floor and residential units above. In addition to the commercial space, which remains vacant; there is a vestibule, elevator lobby, and stairwell on the first floor. The basement is used as a utility room. Adjacent to the enclosed occupied space is open air parking for building occupants.

1.6.2. Contaminant Distribution

From approximately 1955 to approximately 2002, 50 Tufts Street was used for storage and distribution of industrial chemicals, laundry supplies, and dry-cleaning supplies. Chemicals stored at and delivered to and from 50 Tufts Street included chlorinated solvents. These chlorinated VOCs – particularly PCE, trichloroethylene (TCE), and 1,1,1 trichloroethane (TCA) – have been detected in soil, soil vapor, indoor air, and groundwater at 50 Tufts Street. A release of chlorinated VOCs to soil and groundwater at the Site was first reported to MassDEP in 2002.

Soil samples were collected by others at the Property during remedial activities related to the former use as an automobile service station and garage. PCE and TCE were both detected in the sample collected at a depth of 10 to 15 feet. Residual gasoline contamination and volatile petroleum hydrocarbons (VPH), associated with the former use remains and were addressed by as a separate release (RTN 3-34310) by a previous owner, Wash Dev LLC.

Chlorinated VOCs have been detected at the Site in the shallow and deep overburden and bedrock groundwater. Based on the results of years of groundwater sampling conducted Site wide through April 2025, GEI has estimated the boundaries of the area where chlorinated VOC concentrations in shallow groundwater (including PCE which is the indicator compound of potential concern (COPC) at the Site) exceed the Method 1 GW 2 standard (20 micrograms per liter (µg/L) for PCE). The Property is within the boundaries of that area. Groundwater samples were collected on the Property one time and PCE was detected above the GW-2 standard.

Concentrations of PCE, TCE and trans-1,2-dichloroethylene (trans-1,2-DCE) were detected in indoor air in the basement once above the MassDEP Residential Threshold Value (TVr); however, these concentrations were still below the Commercial Threshold Value (TVc) and the sample was collected while construction activities were ongoing and the basement sump was not covered and sealed. The detected concentrations of PCE and TCE have been below the TVr in three subsequent rounds of sampling in the basement and each of the five rounds of sampling on the first floor. The concentration of trans-1,2-DCE detected was slightly above the applicable TVr one time in five samples on the first floor. Concentrations of PCE were not detected in indoor air in the second-floor residential units above the TVr.

1.6.3. Site Conditions

As presented in Phase V submittals for the Site, an evaluation of the Monitored Natural Attenuation (MNA) program indicates that the groundwater plumes are stable, overall groundwater concentrations of chlorinated VOCs are not increasing, and natural attenuation processes are occurring at the Site which will likely reduce contaminant concentrations in groundwater over time. Construction dewatering associated with the Massachusetts Bay Transit Authority (MBTA) Green Line Extension (GLX) project occurred between 2019 and 2020, shifting the plume in the area of the corner of Tufts Street and Washington Street to the south by 200-to-300 feet, though within the existing Site boundaries. While the center of mass of the plume has shifted the plume remains stable. Site investigations have also demonstrated that soil vapor plumes are stable. Soil vapor and indoor air data collected from the 103 Washington Street property conducted following the conclusion of the dewatering activities

demonstrates that the Property has not been affected by this shift in the plume. Visible non-aqueous phase liquid (NAPL) has not been observed at the Site, and any dense non aqueous phase liquid (DNAPL) that may be present is not migrating and exists in a stable configuration. The Phase III demonstrated that it is not feasible to eliminate DNAPL at the Site. There are no unpermitted releases of oil or hazardous material (OHM) at the Site. Accordingly, all sources of OHM at the Site have been eliminated or controlled to the extent feasible.

1.6.4. Receptors and Potential Exposure Pathways

The newly constructed building at the Property is currently occupied. Potential exposure pathways at the Property based on the distribution of contaminants include:

- Ingestion and dermal contact with soil and inhalation of soil derived fugitive dust by a future commercial worker, resident, trespasser, visitor, emergency utility worker, and construction worker if the Site is redeveloped.
- Dermal contact with groundwater by a future construction worker.
- Inhalation of air in an excavation by a future construction worker.
- Inhalation of indoor air by current and future commercial occupants.
- Inhalation of indoor air by current and future residential occupants.

1.6.5. Ecological Exposure Potential

The Property is in an urban area, is fully developed, and would not likely represent a potentially significant terrestrial habitat. Based on the low levels of COPCs in accessible surface soils and the scarcity of open land, the Property does not provide for exposures for potential terrestrial receptors. The closest surface water bodies are the Mystic River, approximately 1 mile east of the Property, and the Charles River, approximately 1.1 miles southeast of the Property. Based on the distance to the nearest aquatic receptors and the current levels of COPCs in groundwater at the Property, the transport of COPCs in groundwater to surface water and sediment is not considered to be a significant exposure pathway.

2. General Property Information

2.1. Property and 50 Tufts Street Location and Description

2.1.1. 103 Washington Street

The Property is within the Site boundary associated with a release of chlorinated VOCs to groundwater at 50 Tufts Street. 50 Tufts Street is approximately 510 feet west of the Property. The Property is in a commercial/residential zoning district, fronts residences to the north, a new multi-family apartment building to the west, residential and commercial properties to the east, and Washington Street to the south.

The Property at 103 Washington Street was formerly an automobile repair shop. The Property was developed with a one-story, masonry and wood building, constructed in approximately 1920 on a concrete slab without a basement. Based on soil vapor sampling conducted by GEI a SSDS classified as an AEPMM was installed in 2007. The building was vacated in May 2017 and the AEPMM was deactivated. The building was demolished around March 2019.

The Property has been redeveloped as an approximately 3,500 square foot mixed-use development with commercial space and open-air parking on the first floor and residential units above. In addition to the commercial space, which remains vacant; there is a vestibule, elevator lobby, and stairwell on the first floor. The basement is used as a utility room. Adjacent to the enclosed occupied space is open air parking for building occupants.

GEI reached out numerous times to the developer regarding installing a vapor mitigation system at 103 Washington Street. The developer did not agree to installation of a system, although they did consent to soil vapor and indoor air testing. According to the Property owner, no soil was transported off site and excess soil was reused on site during construction. Any groundwater or stormwater was recharged onsite.

2.1.2. 50 Tufts Street

50 Tufts Street is approximately 51,111 square feet and developed with an approximately 20,594-square foot, one-story, masonry block building. The Property building is used as warehouse space for Emerson College and as a commercial gymnasium.

The eastern side of the building abuts the sidewalk and then Tufts Street, and on the western side of the building is a narrow strip of vegetation and then railroad tracks. Immediately north and south of the building is paved parking. Further south of the building is a gravel hill that slopes toward Washington Street. Access to the Property is restricted by an 8-foot-high chain-link fence.

The building was constructed in two stages. The approximately 8,400-square foot northern portion of the building was constructed in 1955. An approximately 12,200-square foot addition was constructed in 1977.

The building is slab on grade construction. Approximately 3,300 square feet of the building was constructed at natural grade with the remainder of the building constructed on approximately 4 feet of fill.

2.2. Natural Resource Areas

Based on background information and the Massachusetts Geographic Information System (MassGIS) Natural Resources Map for the Site (Figure 3) dated May 13, 2025, environmental setting and potential sensitive receptors of the Site and its vicinity include:

- Residential Population: Because the Site is an urban area, it is estimated that greater than 1,000 residents live within 0.5-mile of the Site.
- On-Site Workers: Residential and other commercial properties within the Site are occupied.
- Institutions: The Michael E. Capuano Early Childhood Center is approximately 350 feet east of 50 Tufts Street, located within the Site.
- Drinking Water Supplies: There are no known drinking water supplies (Zone II areas, Interim Wellhead Protection Areas, Zone A areas, Potentially Productive Aquifers, or private wells) or Sole Source Aquifers within 500 feet of the Site.
- Surface Waters and Wetlands: There are no known wetlands, vernal pools, ponds, lakes, or reservoirs within 500 feet of the Site. The nearest surface water is the Mystic River, located approximately 0.9-mile northeast of the Site.
- Fish Habitat: There is no known fish habitat within 500 feet of the Site.
- Area of Critical Environmental Concern (ACEC): According to the MassGIS map, the Site is not located in an ACEC.
- Threatened or Endangered Species: According to the MassGIS map, there are no Natural Heritage and Endangered Species Program Estimated Habitats for Rare Wetlands Wildlife within 500 feet of the Site. According to the Massachusetts Natural Heritage Atlas, there are no priority habitats of rare species, estimated habitats of rare wildlife, or certified vernal pools within 500 feet of the Site.
- Protected Open Space: According to the MassGIS map, the Capuano Center, located approximately 350 feet east of the Property, is a Protected Open Space. There are no other known Protected Open Spaces within 500 feet of the Site.

2.3. Disposal Site Map

The Disposal Site, including the Site boundary and soil and groundwater sample locations, is shown in Figure 2.

3. Property Investigations: IES

On May 30, 2017, Wash Dev LLC (the former owner of the Property) submitted a Release Notification Form (RNF) for the presence of petroleum hydrocarbons in soil. The release was assigned RTN 3-34310. Between June and December 2017, IES Inc. of Lynnfield, Massachusetts submitted a Release Abatement Measure (RAM) Plan, a RAM Status Report, a RAM Completion Report, and a Permanent Solution Statement (PSS). The investigations that are representative of conditions at the Property are summarized below. The IES PSS Report is in Appendix C.

In 2017 the Property was developed with a vacant one-story, masonry and wood building, constructed in approximately 1920 on a concrete slab without a basement. The Property had been last used as an automobile repair shop (County Auto Repair) and before that, as a gasoline filling station.

3.1. ASTM Phase I Environmental Site Assessment

The 2017 ASTM Phase I Environmental Site Assessment prepared by IES identified the historical use of the Property, potential presence of underground storage tanks (USTs), and the 50 Tufts Street disposal as Recognized Environmental Concern (RECs). IES conducted a subsurface investigation at the Property in April 2017 to address the RECs.

IES installed six soil borings at the Property (IES-1 through IES-6) and installed five groundwater monitoring wells (IES-1, IES-2 and IES-4 through IES-6). IES collected four soil samples from borings IES-1, IES-4, IES-5, and IES-6 and submitted the samples to Phoenix Environmental Laboratories, Inc. (Phoenix) of Manchester, Connecticut for analysis of VOCs (IES-5), VPH (IES-1 and IES-4) and extractable petroleum hydrocarbons (EPH) (IES-6). The soil data is in Table 1.

IES completed four of the soil borings as groundwater monitoring wells and collected groundwater samples from the monitoring wells. The samples were submitted to Phoenix for the following analysis: VPH (from IES-1, IES-2 and IES-4), EPH and polycyclic aromatic hydrocarbons (PAHs) (IES-1 and IES-4), Dissolved metals (IES-1), and VOCs (IES-1, IES-5 and IES-6). The groundwater data is summarized in Table 2.

The concentration of the VPH fractions, C₅-C₈ Aliphatics, C₉-C₁₀ Aromatics and C₉-C₁₂ Aliphatics in soil exceeded the applicable MCP Reporting Concentration (RC-S1). The concentrations of PCE and TCE exceeded the applicable MCP Reporting Concentration (RC-GW2). IES reported the reportable concentrations of gasoline related contaminants and MassDEP assigned RTN 3-34310 to the release. IES attributed the concentrations of PCE and TCE to the 50 Tufts Street Site (RTN 3-23246) and did not consider them COCs associated with RTN 3-34310.

3.1.1. Release Abatement Measure – IES, September to October 2017

According to IES, three USTs (3,000-gallon and 2,000-gallon gasoline and 1,000-gallon waste oil) and a 275-gallon fuel oil tank were removed from the Property in 1987. Between September 5 and October 23, 2017, Was Dev, LLC conducted a Release Abatement Measure at the Property to address residual VPH

and EPH soil contamination identified during the subsurface investigation. Approximately 250 cubic yards (379.72 tons) of gasoline contaminated soil was excavated from the southeastern corner of the Property. The excavation extended to depths between 10 and 12.5 feet. The RAM Completion Report states that no groundwater dewatering occurred. Twelve confirmatory soil samples were collected from the limits of the gasoline contaminated soil excavation, the samples were only submitted for analysis of VPH. A summary of the confirmatory soil samples is in Table 1. In December 2017, IES prepared a Permanent Solution Statement for RTN 3-34310. The extent of the RAM excavation is shown on figures included in the Permanent Solution Statement in Appendix C.

4. Property Investigations: GEI

GEI has conducted subsurface investigations that included collecting soil, groundwater, soil vapor, and indoor air samples across the Site for more than 20 years. Reports that summarize investigations that are pertinent to 103 Washington Street include:

- Phase II Comprehensive Site Assessment (CSA), Method 3 Risk Characterization, and Phase III Remedial Action Plan (RAP), 50 Tufts Street, Somerville, MA, RTN 3 23246, dated July 14, 2008.
- Immediate Response Action Completion (IRAC) Report and Remedial Monitoring Report (RMR) No. 11, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated May 11, 2009.
- Immediate Response Action Completion (IRAC) Report Amendment, RTN 3-23246, 50 Tufts Street Site, Somerville, Massachusetts, dated April 1, 2011.
- Phase IV Final Inspection Report, Remedial Monitoring Report No. 15, and Phase V Remedy Operation Status Report. 50 Tufts Street, Somerville, Massachusetts, dated August 4, 2011.
- Phase V Status Report No. 24 Remedial Monitoring Report 39, dated August 2023.
- Phase V Status Report No. 25 Remedial Monitoring Report 40, dated February 2024.
- Phase V Status Report No. 26 Remedial Monitoring Report 41, dated August 2024.
- Phase V Status Report No. 27 Remedial Monitoring Report 42, dated February 2025.

The investigations that are representative of conditions at the Property since it has been redeveloped as a mixed-used development are summarized below. The boring logs and laboratory reports associated with these investigations have been previously submitted to MassDEP and are not included in this report.

4.1. Groundwater Sampling

Although there are no groundwater monitoring wells on the Property, monitoring wells MW111/MW111R are approximately 190 feet northwest and upgradient, MW103 is approximately 235 feet northwest and upgradient, and MW122 is approximately 75 feet northeast and crossgradient (Figure 2). Monitoring well MW111 was a shallow overburden well screened between 4 and 14 feet and was destroyed by the city during utility work between January and April 2018. GEI installed monitoring well MW111R as a replacement in October 2024 which is screened from 5 to 15 feet. Monitoring well MW103 is a shallow overburden well screened 6 to 16 feet and monitoring well MW122 is a shallow overburden well screened from 4 to 16 feet. Due to their proximity to the Property, data obtained from MW111/MW111R, MW103, and MW122 are summarized below and included in the Risk Characterization for the Property.

Groundwater sampling has been conducted near the Property by GEI. The groundwater samples were collected using a peristaltic pump and low flow techniques, including measurement of field parameters and persulfate. The groundwater samples were submitted to Accutest Laboratories (Accutest) of

Marlborough, Massachusetts and Alpha Analytical of Westborough, MA (Alpha) for analysis of VOCs by U.S. Environmental Protection Agency (EPA) Method 8260B and EPA Method 8260D, respectively. Ground water samples were collected near the Property at:

- MW111 between January 2007 and April 2008 (six samples)
- MW111R in March 2025 (one sample)
- MW103 between May 2006 and April 2024 (seven samples)
- MW122 between January 2008 and November 2024 (thirty-eight samples)

The laboratory testing results for groundwater samples collected from MW111, MW111R, MW103, and MW122 are summarized in Table 3. The laboratory report for the March 2025 groundwater monitoring event is in Appendix D.

The measured groundwater depths and calculated elevations for these wells and other wells on the Site are summarized in Table 4. A groundwater contour map based on the April 1, 2024; measurements is shown on Figure 4 which is considered representative of site conditions.

In MW111, concentrations of PCE and TCE were detected between 1,160 µg/L and 13,700 µg/L, and 19.9 µg/L and 150 µg/L, respectively, between January 2007 and April 2008. In MW111R, concentrations of PCE and TCE were detected at 74 µg/L and 5.3 µg/L, respectively, in March 2025. In MW103, concentrations of PCE and TCE were detected between 43 µg/L and 2,600 µg/L, and between 3.5 µg/L and 109 µg/L, respectively, between May 2006 and April 2024. In MW122 concentrations of PCE and TCE were detected between 74 µg/L and 1,700 µg/L, and 5.3 µg/L and 220 µg/L, respectively, between January 2007 and November 2024.

4.2. Soil Sampling

Prior to the installation of monitoring wells MW111, MW103, and MW122, three soil samples were collected from each boring and submitted to Accutest for VOC analysis by EPA Method 8260B. The laboratory testing results for these soil samples are summarized in Table 5.

In boring B111 one shallow soil sample (B111-VAC-GRAB) was collected at a depth of 3 feet and two subsurface soils samples (B111(7-9') and B111 (13-15')) were collected from depths of 7 to 9 feet and 13 to 15 feet, respectively. PCE was detected in B111 (13-15') at a concentration of 3.15 mg/kg and was not detected above the laboratory reporting limit in either of the other samples; TCE was detected at an estimated concentration of 0.0469 mg/kg in B111 (13-15').

In boring B103 one shallow soil sample (B103-S1) was collected from a depth of 2 to 3 feet and two subsurface soil samples (B103-S2 and B103-S6) were collected from a depth 6 to 8 feet and 14 to 16 feet, respectively. Chlorinated VOCs were not detected above the laboratory reporting limit in any of the three samples.

In B122 three subsurface soil samples (B122-S1, B122-S3, and B122-S6) were collected from a depth of 6 to 8 feet, 10 to 12 feet, and 16 to 18 feet, respectively. PCE was detected at an estimated concentration

of 0.0257 mg/kg in sample B122-S1 and at a concentration of 1.31 mg/kg in B122-S6, and TCE was detected at an estimated concentration of 0.0925 mg/kg in B122-S6.

4.3. Sub-Slab Soil Vapor Sampling

Between May 2023 and February 2025, GEI conducted sub-slab soil vapor sampling five times. The basement is used as a utility room. GEI submitted the samples to Alpha for VOC analysis by EPA Method TO 15 for the following analytes:

- 1,1-Dichloroethane (1,1-DCA)
- 1,1-Dichloroethylene (1,1-DCE)
- trans-1,2-Dichloroethylene
- cis-1,2-Dichloroethylene
- 1,1,1-Trichloroethane (TCA)
- 1,1,2,2-Tetrachloroethane
- 1,1,2-Trichloroethane
- Tetrachloroethylene (PCE)
- Trichloroethylene (TCE)
- Vinyl Chloride

Soil vapor sampling was conducted on:

- May 10, 2023
- July 6, 2023
- March 5, 2024
- December 4, 2024
- February 11, 2025

GEI installed two sub-slab soil vapor monitoring points through the basement slab in May 2023. The samples were collected over a 1-hour period in stainless steel SUMMA canisters equipped with flow regulators. Sample locations are shown on Figure 5. Laboratory testing results for sub-slab soil vapor samples are summarized in Table 6 and the laboratory reports for the February 2025 sampling are in Appendix D. Samples are compared to the applicable Sub-Slab Soil Gas Screening Value from MassDEP Guidance “WSC No. 16 435: Vapor Intrusion Guidance,” dated October 2016 (2016 VI Guidance). The basement and first floor of the building are commercial spaces.

Concentrations of chlorinated VOCs were not detected above the MassDEP Residential Sub-Slab Screening Values (RSSV), or the applicable Commercial Sub-Slab Screening Value (CSSV) in SV1 in all rounds of soil vapor sampling.

In May 2023, the concentrations of PCE and TCE in SV2 were detected greater than the RSSV, but less than the applicable CSSV. In July 2023, the concentrations of PCE and TCE in SV2 were greater than the RSSV and the concentration of TCE was also greater than the CSSV. In March 2024, the concentration of TCE in SV2 was greater than the RSSV but less than the applicable CSSV and the concentration of PCE in SV2 was less than the RSSV. In December 2024, the concentration of TCE in SV2 was greater than the

RSSV but less than the applicable CSSV and the concentration of PCE in SV2 was less than the RSSV. In February 2025, the concentrations of PCE and TCE in SV2 were less than the RSSV and the CSSV.

4.4. Indoor Air Sampling

Between May 2023 and February 2025, GEI conducted indoor air sampling five times. Indoor air sampling was conducted on:

- May 10, 2023 (first floor)
- July 6, 2023 (basement, first floor)
- March 5, 2023 (basement, first floor)
- December 4, 2024 (basement, first floor, second floor [2 samples])
- February 11, 2025 (basement, first floor, second floor [2 samples])

The indoor air samples were collected from the basement, first floor and second floor over 24 hours and submitted to Alpha for the VOC analysis list above. Neither the basement nor the first floor are considered residential living space. The locations of the samples are shown in Figure 4. Laboratory testing results for indoor air samples are summarized in Table 7 and are compared to the applicable Indoor Air Threshold Value from the 2016 VI Guidance. The laboratory reports for February 2025 are in Appendix D.

During the May 2023 event, GEI collected one indoor air sample on the first floor, but due to ongoing building construction the basement sample was disturbed and not submitted for analysis. In May 2023, chlorinated VOCs were not detected above the TVr or the applicable TVc in the first-floor sample. In July 2023, the concentration of trans-1,2-Dichloroethylene (trans-1,2-DCE) slightly exceeded the TVr, but not the applicable TVc in the first-floor sample. In March 2024, no chlorinated VOCs were detected above laboratory reporting limits in the first-floor sample. In December 2024, the concentration of PCE on the first floor was below the TVr and TVc. In February 2025, no chlorinated VOCs were detected above laboratory reporting limits in the first-floor sample. GEI originally collected the first floor sample on February 11, 2025, but returned on February 21, 2025, because the original sample from February 11, 2025, malfunctioned and was not able to be analyzed.

In the basement sample collected in July 2023, the concentrations of PCE, TCE and trans 1,2-DCE exceeded the TVr, but not the applicable TVc. In March 2024, December 2024 and February 2025 the concentration of PCE in the basement was below the TVr and TVc.

Two indoor samples were collected on the second floor in December 2024 and February 2025. Although PCE were detected in all the samples, the concentrations were below the TVr.

4.5. Basement Sump Sampling –May 2023

GEI collected one standing water sample from the sump in the basement during the soil vapor sampling event in May 2023. The sample was submitted to Alpha for VOC analysis by EPA Method 8260B.

Chlorinated VOCs cis-1,2-DCE and TCE were detected above the laboratory limits at concentrations of 1.4 µg/l and 1.5 µg/l respectively. The laboratory testing results are summarized in Table 8. At the time of sampling, construction in the building was ongoing, and the sump did not have a lid. On subsequent visits to the property the sealed sump pit cover was in place.

5. GLX Project

The MBTA, through its contractor GLX Constructors (GLXC), has completed work to extend MBTA Green Line service to Union Square in Somerville and beyond to College Avenue in Medford. This GLX Project includes significant infrastructure improvements near the Site, including a new pump station, reconstruction of the bridge passing over Washington Street, new train tracks within the MBTA right of way (ROW), a new train station, and utility improvements.

As part of roadway reconstruction and utility improvements in Washington Street, GLXC conducted construction dewatering between April 2019 and August 2020. The construction dewatering expanded the Site plume to the south in the area of the corner of Tufts Street and Washington Street by 200-to-300 feet, though within the existing Site boundaries. While the center of mass of the plume has shifted the plume remains stable. Soil vapor and indoor air data collected from the Property conducted following the conclusion of the dewatering activities demonstrates that the Property has not been affected by this shift in the plume.

6. Evaluation of Vapor Intrusion Pathway

All pertinent data were reviewed and considered to evaluate the potential for a complete vapor intrusion pathway on the Property. Based on the following lines of evidence, there is the potential for a complete vapor intrusion pathway under current conditions:

- The groundwater concentration contours (Figure 2) indicate that the Property is overlying the estimated groundwater plume of PCE greater than the Method 1 GW-2 standard (20 µg/L).
- The maximum concentration of PCE detected in sub-slab soil vapor samples collected from the Property (189 µg /m³) exceeds the MassDEP RSSV (98 µg /m³).
- The maximum concentration of TCE detected in sub-slab soil vapor samples collected from the Property (98.3 µg /m³) exceeds the MassDEP RSSV (28 µg /m³).

There are mitigating factors that indicate that a complete vapor intrusion pathway at the Property is limited, including:

- Residual or connected phase DNAPL has not been detected near or at the Property.
- All sub-slab soil vapor and indoor air testing at the Property have been conducted between 2023 and 2025, following the migration of the plume southward toward Washington Street due to GLX construction dewatering.
- The mixed-use development on the Property includes a small basement used for utilities, first floor commercial, first floor open-air parking and second floor residential units (above the commercial space or open-air parking).
- The MassDEP Guidance “WSC No. 16-435: Vapor Intrusion Guidance,” dated October 2016 (2016 VI Guidance) states that indoor air concentrations less than the MassDEP TVr indicate that the vapor intrusion pathway is unlikely to be of concern under current residential site conditions and concentration less than the TVc are unlikely to be of concern under current commercial site conditions. Concentrations of PCE were not detected in indoor air in the second floor residential units above the TVr. Concentrations of PCE, TCE and trans-1,2-DCE were detected in indoor air in the basement once above the TVr; however, these concentrations were still below the TVc and the sample was collected while construction activities were ongoing and the basement sump was not covered and sealed. The detected concentrations of PCE and TCE have both been below the TVr in three subsequent rounds of sampling in the basement and the five rounds of sampling on the first floor. The concentration of trans-1,2-DCE detected was slightly above the applicable TVr one time in five samples on the first floor.

6.1. Future Vapor Intrusion Potential

Although the building on the Property may be modified at some point in the future, geologic conditions near the Property will not. Geologic conditions have a strong influence on attenuation of VOCs as they volatilize from groundwater to soil vapor. The average sub slab soil vapor concentrations of the

chlorinated VOCs, except TCE, at the Property are below the MassDEP residential sub slab soil vapor screening values. The average sub-slab soil vapor concentration of TCE ($34.7 \mu\text{g} / \text{m}^3$) is only slightly above the RSSV ($28 \mu\text{g} / \text{m}^3$). These concentrations are expected to be representative of worst case sub slab soil vapor concentrations under future hypothetical building conditions, therefore, vapor intrusion also is unlikely to be of concern under future conditions.

As discussed further in the Method 3 Risk Characterization (Section 4.7.5), GEI conservatively evaluated future hypothetical indoor air EPCs based on the maximum sub slab soil vapor results at the Property, divided by the MassDEP generic sub slab soil vapor to indoor air dilution factor of 70, in accordance with Section 2.3.3.2 of the 2016 VI Guidance. The conservative future indoor air EPCs pose NSR to future residential occupants. This further supports the conclusion that the vapor intrusion pathway is unlikely to be of concern under future conditions.

7. Method 3 Risk Characterization

Five Site-wide Method 3 Risk Characterization Reports were previously prepared for the Site. The July 2008 Phase II/Phase III included a Method 3 Risk Characterization for the Site, prepared by AMEC Earth & Environmental (AMEC) of Westford, Massachusetts. In response to MassDEP comments, AMEC prepared a Supplemental Method 3 Risk Characterization (Supplemental Risk Characterization) in May 2009. The Supplemental Risk Characterization evaluated potential risks using the framework in the July 2008 Method 3 Risk Characterization, including an indoor air Exposure Assessment for each affected residence without an effective Exposure Pathway Mitigation Measure (EPM). A Revised Supplemental Risk Characterization was prepared to support the IRAC Report. Potential risks presented in the Supplemental Risk Characterization were updated in the Revised Supplemental Risk Characterization to reflect additional data collection and additional EPMs installed by GEI. An Updated Revised Supplemental Risk Characterization was prepared in April 2011 to respond to a MassDEP Notice of Audit Findings and Notice of Noncompliance for the IRAC Report. An Updated Method 3 Risk Characterization was prepared by ARCADIS U.S., Inc. of Chelmsford, Massachusetts in August 2015 to incorporate updated MassDEP toxicity information for PCE and TCE.

The Site-wide Method 3 Risk Characterizations described above have adequately addressed the potential for cumulative risk for potential exposures throughout the Site, in accordance with MassDEP risk characterization guidance (WSC-95-141). This Method 3 Risk Characterization was completed for the Property (103 Washington Street Risk Characterization) based on its present use (mixed-use development) and presents a more focused assessment of risk for the Property to support this Partial Permanent Solution Statement.

7.1. Current and Reasonably Foreseeable Activities and Use

Consistent with the requirements of the MCP (310 CMR 40.0923), the 103 Washington Street Risk Characterization considered both current and future uses of the Property. The Property is in a commercial/residential zoning district, fronts residences to the north and east, a new mixed-use building to the west, and Washington Street to the south. The Property is developed with a mixed-use building with commercial space and open-air parking on the first floor and residential units above.

7.2. Potential Human Receptors

Potential human receptors were identified based on current and foreseeable uses of the Property. Current use receptors at the Property are visitors, trespassers, and emergency utility workers responding to an emergency repair. Future use receptors of the Property are residents, emergency utility workers, and construction workers during potential future excavation/development activities. For the purposes of this risk characterization, only certain potential current and future receptors were quantitatively evaluated, as described below.

7.2.1. Future Construction Worker

In accordance with the MCP [310 CMR 40.0924(2)(b)(4)(c)], a future construction worker at the Property may be exposed to surface and subsurface soil (0 to 15 feet) during excavation activities. We evaluated a construction worker exposed to soil 5 days a week for a period of 6 months. This exposure is appropriate because most construction activities likely occur at depths less than 15 feet and no one area is more likely to be excavated in the future. A construction worker may be exposed to COPCs in soil from incidental ingestion, dermal absorption, and inhalation of fugitive dust.

A construction worker may also be exposed to COPCs in groundwater from dermal absorption while excavating to a depth of 15 feet. We assumed a construction worker is exposed to groundwater for ½ hour per day, 5 days a week, for 1 month of the construction project because construction sites undergo a dewatering process that would prevent contact with groundwater.

Based on the assumption of construction worker dermal exposure to groundwater in an excavation, there is also the potential for exposure to VOCs in excavation air originating from contaminants in groundwater. We evaluated a construction worker exposure to volatile constituents that may volatilize into the air of an excavation area.

7.2.2. Current/Future Emergency Utility Worker

The MCP (310 CMR 40.0924[2][b][4]) requires evaluating utility worker exposure to soil from 0 to 6 feet below ground surface. However, we conservatively evaluated a utility worker exposure to soil based on the maximum concentrations of COCs in soil from 0 to 15 feet throughout the Property, regardless of the presence of utilities. MassDEP also recommends evaluating a utility worker as a current receptor, because an emergency utility repair may be required at any time (MassDEP, 1999).

A utility worker may be exposed to COCs in soil from incidental ingestion, dermal absorption, and inhalation of fugitive dust. In accordance with MassDEP's Guidance WSC/ORS #95-141: "Guidance for Disposal Site Risk Characterization," dated July 28, 1995 (MassDEP, 1995), we evaluated a utility worker exposed to soil for one 8-hour workday per year.

Since the depth to groundwater at the Property is between approximately 4 to 16 feet, utility worker dermal exposure to groundwater could potentially occur and was quantitatively evaluated in this risk characterization. Additionally, there is the potential for exposure to VOCs originating from groundwater to migrate through the soil column into the air within a utility excavation. Therefore, we evaluated a utility worker exposure to volatile constituents that may volatilize into the air of an excavation during a utility repair.

7.2.3. Current/Future Hypothetical Resident

We evaluated a current and future resident exposure scenario at the Site. We evaluated a current and future residential soil exposure scenario at the Property assuming soil is currently accessible. Soil beyond the Property is not considered to be impacted. As discussed in Section 2, focused soil excavation has been conducted at the Site to address VPH and EPH soil contamination identified during the subsurface

investigation. Soil samples collected from within the excavated areas prior to removal were not included in the risk characterization data set because they are not representative of current soil conditions. Potential future construction activities at the Site may result in the removal of pavement and the re-distribution of subsurface soil to the surface; therefore, we assumed a current and future resident may be exposed to Site-wide soil to a depth of 0 to 15 feet. We assumed a resident is exposed to soil 5 days a week for the 7 warmer months (April to October) each year, when soil is not frozen and exposure to soil would be expected, for a period of 30 years. A current and future resident may be exposed to COCs in soil from incidental ingestion, dermal absorption, and inhalation of fugitive dust.

Groundwater is not used as drinking water; therefore, residential exposure to groundwater was not quantitatively evaluated.

Current and future residents may also be exposed to COCs in indoor air. We conservatively assumed a resident at occupied buildings would have exposure to indoor air for 24 hours per day for 30 years. A resident may be exposed to COCs in indoor air from inhalation.

7.2.4. Receptors Not Quantitatively Evaluated

Some potential receptors at the Property (including visitors, trespassers, etc.) are expected to have less frequent or less intense exposures than the receptors quantitatively evaluated in this risk characterization as described above. Commercial workers present within the building were also not evaluated. The receptors quantitatively evaluated at the Property, such as residents, are considered protective of other potential receptors with lower exposure potential. If a condition of NSR exists for these receptors quantitatively evaluated in the risk characterization, then a condition of NSR also exists for those less exposed receptors. Therefore, less exposed receptors were not considered further in this risk characterization.

7.3. Potential Environmental Receptors

The Property is in an urban area, is fully developed, and would not likely represent a potentially significant terrestrial habitat. Based on the low levels of COCs in accessible surface soils and the scarcity of open land, the Property does not provide for exposures for potential terrestrial receptors.

There are no surface water bodies at the Property. The closest surface water bodies are the Mystic River, located approximately 1-mile northeast of the Property, and the Charles River, located approximately 1.7 miles south-southeast of the Property. Based on the distance to the nearest aquatic receptors and the current levels of COCs in groundwater at the Property, the transport of COCs in groundwater to surface water and sediment is not considered to be a significant exposure pathway.

7.4. Chemical Data Used in the Risk Characterization

Analytical data used in the risk characterization are available for soil samples collected at depths ranging from 5 to 15 feet deep, groundwater, indoor air and sub-slab soil vapor. Analytical results that are considered representative of current conditions were used in the risk characterization and are further described below. Soil, groundwater, sub-slab soil vapor, and indoor air chemical data evaluated in this

risk characterization is presented in Table 1, Table 2, Table 3, Table 6, and Table 7. Summary statistics for data included in the risk characterization is presented in Tables RC-1 and RC-2 for soil and groundwater respectively, Table RC-3 for sub-slab soil vapor and Table RC-4 for indoor air.

7.4.1. Soil

IES conducted a RAM (RTN 3-34310) at Property to excavate residual soil contamination associated with petroleum USTs previously at the Property. Although the petroleum contamination is not associated with the Site (RTN 3-23246), GEI has included these contaminants in the Risk Characterization to be conservative.

A total of 11 soil samples collected from depths of 5 to 15 feet at the Site are considered representative of current conditions. No samples shallower than 5 feet have been collected. As discussed in Section 3, focused soil removals have been conducted at the Site to reduce petroleum contaminant concentrations. Soil samples collected from within the excavated areas prior to removal were not included in the risk characterization data set. Three samples remaining in place following the soil removal (IES-1/S-2, IES-5/S-4, and IES-6/S-2) and 8 post-excavation soil samples (SS-1 through SS-7 and SS-9) were included in the risk characterization. Soil data included in the risk characterization are presented in Table 9. Summary statistics for soil chemical data included in the risk characterization are in Appendix E (Table RC-1).

7.4.2. Groundwater

Groundwater data included in the risk characterization are from the five groundwater monitoring wells IES installed (IES-1, IES-2 and IES-4 through IES-6) as part of a subsurface investigation in April 2017. Each of these wells was sampled once. Groundwater data from monitoring wells MW111/MW111R, MW103, and MW122 were also included in the risk characterization. MW111/MW111R is located approximately 190 feet northwest and upgradient of the Property. MW103 is located approximately 235 feet northwest and upgradient of the Property, and MW122 is located approximately 75 feet northeast and crossgradient of the Property (Figure 2). Due to their proximity to the Property, data obtained from MW111/MW111R, MW103, and MW122 are considered representative of conditions at the Property. To evaluate current groundwater conditions, groundwater data from the off-site monitoring wells were limited to samples collected between 2020 and 2025. A total of 17 groundwater samples were included in the risk characterization. Groundwater data included in the risk characterization are presented in Table 10. Summary statistics for groundwater chemical data included in the risk characterization are presented in Appendix E (Table RC-2).

7.4.3. Sub-Slab Soil Vapor

Ten sub-slab soil vapor samples were collected from two locations at the Property between May 2023 and February 2025. Sub-slab soil vapor sampling results were evaluated to estimate future vapor intrusion conditions and identify COCs. Soil vapor data included in the risk characterization are presented in Table 11. Summary statistics for sub-slab soil vapor chemical data included in the risk characterization are presented in Appendix E (Table RC-3).

7.4.4. Indoor Air

Indoor air samples were collected from the basement, commercial space on the first floor, and from residential units on the second floor. Indoor air from the basement was sampled four times between July 2023 and February 2025. Indoor air from the first floor was sampled five times between May 2023 and February 2025. Indoor air from the second floor was sampled from two locations in December 2024 and again in February 2025. While there is no expected exposure to indoor air in the basement, all indoor air samples were conservatively included in the risk characterization regardless of where they were collected. Indoor air data included in the risk characterization are in Table 12. Summary statistics for indoor air chemical data included in the risk characterization are presented in Appendix E (Table RC-4).

7.4.5. Hot Spot Evaluation

Under the MCP (310 CMR 40.0924), hot spots must be considered as distinct exposure points. A hot spot is defined as a discrete area where the concentrations of OHM are substantially higher than those concentrations in the surrounding area. No “hot spots” have been identified at the Property.

7.5. Contaminants of Concern (COCs)

In accordance with the MassDEP’s “Guidance for Disposal Site Risk Characterization,” all chemicals detected at the Site should be considered COCs and should be carried through the risk assessment process unless one of the following conditions is true:

- The contaminants are present at a low frequency of detection and at low concentrations.
- The contaminants are present at levels that are consistent with “background” for the area and there is no evidence that their presence is related to activities at the site.
- The contaminants are field or laboratory contaminants.

The primary COCs are chlorinated VOCs (principally PCE and TCE) in groundwater and indoor air. The COC selection process for each environmental media is described below.

7.5.1. Soil COC Selection

The VOCs m,p-xylene, cis-1,2-dichloroethene, PCE, and TCE were identified as COCs in soil. Naphthalene was detected at a concentration less than the MassDEP background levels for natural soil and was excluded as a COC.

VPH fractions C9-C10 aromatics, C5-C8 aliphatics, and C9-C12 aliphatics were included as COCs in soil as were EPH fractions C19-C36 aliphatics and C11-C22 aromatics. Hydrocarbon concentrations are likely associated with the former use of the property as an automotive garage and represent post-excavation conditions as discussed in Section 2.

Table RC-1 summarizes the COCs in soil.

7.5.2. Groundwater COC Selection

All VOCs detected in groundwater samples included in the risk characterization were conservatively retained as COCs.

VPH fractions C9-C10 aromatics, C5-C8 aliphatics, and C9-C12 aliphatics were included as COCs in groundwater.

All PAHs detected in groundwater samples included in the risk characterization were conservatively retained as COCs.

Barium and selenium were detected in groundwater analyzed for dissolved metals and retained as COCs.

Table RC-2 summarizes the COCs in groundwater.

7.5.3. Indoor Air COC Selection

VOCs detected in at least one indoor air sample from the basement, first floor, or second floor were conservatively retained as COCs. COCs identified in indoor air include cis-1,2-dichloroethene, trans-1,2-dichloroethene, PCE, and TCE.

Each analyte detected in sub-slab soil vapor was conservatively retained as a COC and evaluated for development of future indoor air EPCs.

Tables RC-3 and RC-4 summarize the COCs in indoor air.

7.6. Soil and Groundwater Categories

This section identifies and documents the applicable soil and groundwater categories, as described in the MCP (310 CMR 40.0930). The soil and groundwater categories are considered general indicators of the potential for exposure to OHM.

7.6.1. Soil Categories

Under the MCP, soil can be classified into one of three categories (S-1, S-2, or S-3). Category S-1 soil represents the highest potential exposure because it assumes unrestricted use of the soil (i.e., residential), whereas category S-3 soil represents the lowest potential for exposure. The Property is developed with a mixed-use apartment building with first floor commercial space and an open-air paved parking lot under a portion of the building. The new building footprint now occupies a majority of the Property. Under current land use at the Site, based on the soil category selection matrix provided in 310 CMR 40.0933(9), currently accessible soil is category S-1, potentially accessible soil (0 to 15 feet) located beneath pavement is category S-2 soil, and isolated soil (greater than 15 feet or under a building) is category S-3 soil. Under current and future land use, children may be present at a high frequency and high intensity while living at the Site.

For the purposes of this risk characterization, we conservatively evaluated all soil as if it were categorized as S-1.

7.6.2. *Groundwater Categories*

The MCP identifies three groundwater categories which correspond to the following three distinct types of exposures:

- **Groundwater Category GW-1** applies to groundwater assumed to be a current or future source of drinking water.
- **Groundwater Category GW-2** applies to groundwater considered to be a potential source of vapors that could migrate through the soil and concentrate in indoor air of existing, occupied buildings. GW-2 is defined as groundwater located within 30 feet of an existing or planned building or structure that is or will be occupied, and the average annual depth to groundwater in that area is 15 feet or less.
- **Groundwater Category GW-3** applies to groundwater that is assumed to discharge to surface water. All groundwater in the Commonwealth is classified as GW-3.

Because the exposures are not necessarily related to each other, they are not mutually exclusive. Therefore, more than one category may be applicable to a site and/or different areas of a site.

Groundwater beneath the Property is not within a current or potential drinking water source area. There are residential units within the building at the Property and occupied buildings within 30 feet on adjacent parcels. The depth to groundwater at the Property is estimated to be between 4 feet and 16 feet bgs. Therefore, groundwater at the Property is less than 15 feet bgs. Based on this information, the applicable groundwater categories for the Property are GW-2 and GW-3.

7.7. Identification of EPCs

The MCP requires estimates of EPCs to be representative of actual and foreseeable exposures.

7.7.1. *Soil EPCs*

Soil EPCs for all receptors are the maximum concentrations detected in the risk characterization data set which includes soils sampled from 5 to 15 feet as representative of current soil conditions. EPCs in soil are in RC-1.

7.7.2. *Fugitive Dust EPCs*

We assumed receptors may inhale and ingest COPCs in soil that are re-suspended as fugitive dust during routine outdoor activities, or more intensive earth-moving activities. We modeled concentrations of COPCs in fugitive dust based on concentrations detected in soil because there were no measured concentrations of COPCs in fugitive dust. Therefore, we used soil EPCs to model fugitive dust EPCs. The derivation of fugitive dust EPCs is in Appendix E.

7.7.3. Groundwater EPCs

Groundwater EPCs for construction worker exposure were set as the average groundwater concentration from samples included in the risk characterization as discussed in Section 7.4.2.

Maximum detected concentrations were used as groundwater EPCs for emergency utility worker exposure.

EPCs in groundwater are in RC-2.

7.7.4. Excavation Air EPCs

Volatile COCs in groundwater within an excavation may volatilize into air. As discussed above, the groundwater EPCs provide a conservative estimate of groundwater concentrations. Therefore, we modeled excavation air EPCs for future construction workers and current/future emergency utility workers based on groundwater EPCs. Excavation air EPCs were modeled using a trench model developed by the Virginia Department of Environmental Quality (VDEQ), Virginia Voluntary Remediation Program (VRP)

(<http://www.deq.virginia.gov/Programs/LandProtectionRevitalization/RemediationProgram/VoluntaryRemediationProgram/VRPRiskAssessmentGuidance/Guidance.aspx>).

The VDEQ trench model is based upon a combination of a vadose zone model to estimate volatilization of gases from contaminated groundwater into a trench, and a box model to estimate dispersion of the contaminants from the air inside the trench into the above-ground atmosphere, to estimate the EPC for air in a trench. The trench model equation is presented below:

$$C_{\text{trench}} = C_{\text{gw}} \times \text{VF}$$

Where:

C_{trench}	=	Concentration of contaminant in trench air ($\mu\text{g}/\text{m}^3$)
C_{gw}	=	Concentration of contaminant in groundwater ($\mu\text{g}/\text{L}$)
VF	=	Volatilization factor (see Attachment A)

The depth to groundwater at the Property ranges from 4 to 16 feet below ground surface. Therefore, excavations at the Property may intercept the water table. Therefore, the VDEQ trench model that assumes some pooled water at the base of an excavation was selected. Under this model, volatile contaminants in groundwater attenuate as they migrate through the vadose zone and into excavation air. Accordingly, this model is considered more appropriate for evaluating a construction excavation at the Property, and GEI assumed that dewatering would lower the groundwater table to approximately 2 feet below the base of the excavation. We relied on the following assumptions in the trench model for a construction excavation: (1) a trench length of 40 feet, (2) a trench width of 40 feet, and (3) a trench depth of 15 feet.

For the emergency utility worker scenario, since MassDEP considers utility repairs to typically occur within 0 to 6 feet of ground surface, groundwater is not likely to be encountered during a utility repair. Accordingly, the same VDEQ model was used for an emergency utility repair, and we relied on the

following assumptions in the trench model for an emergency utility excavation: (1) a trench length of 8 feet, (2) a trench width of 4 feet, and (3) a trench depth of 6 feet.

The trench model parameters and excavation air EPCs are presented in an attachment (Attachment A) to the Method 3 Risk Characterization (Appendix E).

7.7.5. Indoor Air EPCs

Indoor air EPCs have conservatively been identified as the maximum indoor air concentrations detected in samples collected from the basement, first floor commercial space, or second floor residential units.

Future indoor air EPCs were developed in accordance with the MassDEP Vapor Intrusion Guidance (2016), using the average detected sub-slab soil vapor concentrations at each building in combination with the generic default attenuation factor of 70 to calculate future indoor air EPCs that could result from future changes in the building conditions.

Current and future indoor air EPCs are presented in Table 13 and Table RC-5.

7.8. Method 3 Characterization of Risk to Human Health

A quantitative evaluation of the potential risk to human health was performed and is presented in Appendix E. Tables RC-6 through RC-22 in Appendix E include exposure assumptions, contaminant parameters, risk calculations, and risk estimates. In summary, this quantitative evaluation assessed risk to the human receptors identified from exposure to COCs in soil from incidental ingestion, dermal absorption, and inhalation of soil-derived fugitive dust, and exposure to COCs in groundwater from dermal contact and inhalation of volatiles in the air of an excavation, and exposure to COCs in indoor air.

The quantitative evaluation concluded that the Property poses a condition of No Significant Risk (NSR) to human health for all receptors because the calculated sub-chronic and chronic Hazard Indices (HIs) and Excess Lifetime Cancer Risk (ELCR) are less than the MCP non-cancer risk limit of 1, and the MCP cancer risk limit of 1×10^{-5} . A summary of the human health risk estimates is in Table RC-23.

7.8.1. Comparison to Applicable or Suitably Analogous Standards

The MCP Method 1 soil standards are not applicable standards in a Method 3 risk characterization, and there are no other applicable promulgated soil standards for this Property. Therefore, no comparison of soil COC concentrations to public health standards could be made. Because the Property does not meet the criteria for classification as GW 1 groundwater, Massachusetts Drinking Water Standards are not applicable standards for this assessment.

7.9. Risk of Harm to Safety

In accordance with the MCP (310 CMR 40.0971(5)), a separate characterization of risk of harm to safety was also conducted in accordance with 310 CMR 40.0960. There are no rusted or corroded drums or containers, open pits, lagoons, or other dangerous structures at the Property; there is no threat of fire

or explosion at the Property; and there are no uncontained materials which exhibit the characteristics of corrosivity, reactivity, or flammability at the Property. Therefore, a condition of NSR of harm to safety exists at the Property.

7.9.1. Risk of Harm to Public Welfare

The characterization of the risk of harm to public welfare was conducted in accordance with 310 CMR 40.0994, Method 3 Public Welfare Risk Characterization. The purpose of this assessment is to identify and evaluate nuisance conditions and significant community effects. The characterization of risk to public welfare considers effects that are or may result from residual contamination or the implementation of a proposed remedial alternative. The risk of harm to public welfare is also characterized by comparing COC concentrations to MCP Method 3 Ceiling Limits (M3CLs) for soil and groundwater. The M3CLs are levels in soil and groundwater that, if exceeded, indicate the potential for significant risk of harm to the environment and public welfare under future conditions (310 CMR 40.0996).

According to the MCP (310 CMR 40.0994[4]): A level of NSR of harm to public welfare exists or has been achieved if:

- (a) No nuisance conditions exist or will result from the release or threat of release of oil or hazardous material, or the remedial alternative, including:
 - 1. The breathing zone of ambient and indoor air is currently and will, in the reasonably foreseeable future, remain free from persistent, noxious odors,
 - 2. There is accessible drinking water that is and will, in the reasonably foreseeable future, remain free from noxious taste and odors; and
 - 3. Livestock is and will remain, in the reasonably foreseeable future, free from harmful effects. No specific evaluation of livestock is required if it is reasonable to conclude that the human health and environmental risk characterizations conducted for the site are also protective of livestock exposures.
- (b) No community that is currently affected and/or community for which it is reasonably foreseeable to conclude that it could be affected by the release experiences significant adverse impacts considering such factors as the existence of nuisance conditions, loss of active or passive property uses(s), and any non-pecuniary effects which may accrue due to the degradation of public resources directly attributable to the release of Site-related contamination.
- (c) The requirements of 310 CMR 40.0996 concerning the M3CLs are met.

None of the nuisance conditions listed above occurs at the Property.

In accordance with 310 CMR 40.0996, average soil and groundwater concentrations for each COC are compared to the MassDEP M3CLs. Additionally, we conservatively compared the soil and groundwater maximum concentrations to the MCP M3CLs. The average and maximum soil and groundwater concentrations are below M3CLs.

Based on the evidence presented above, a condition of NSR of harm to public welfare exists at the Property under current and future land use.

7.9.2. Risk of Harm to the Environment

We conducted a Stage I screening to evaluate risk to the environment. According to 310 CMR 40.0922, environmental receptors to be considered include biota, habitats, wetlands, and sensitive species that would likely be exposed to OHM. There are no known species of concern, threatened species, or endangered species near the Property. The Property is in an urban area, is fully developed, and would not likely represent a potentially significant habitat. As a result, the Property does not contain a suitable habitat for terrestrial organisms.

The closest surface water bodies are the Mystic River, approximately 1-mile northeast of the Property, and the Charles River, approximately 1.7 miles south-southeast of the Property. Based on the distance to the nearest aquatic receptors and the current levels of COPCs in groundwater at the Property, the transport of COPCs in groundwater to surface water and sediment is not considered to be a significant exposure pathway.

The incomplete exposure pathways for environmental receptors indicate a condition of NSR to the environment exists at the Property.

7.10. Conclusions

The Method 3 Risk Characterization concluded that the Property poses a condition of NSR to human health for all receptors because the calculated subchronic and chronic Hazard Indices (HIs) and Excess Lifetime Cancer Risks (ELCRs) are less than the MCP non cancer risk limit of 1, and the MCP cancer risk limit of 1×10^{-5} .

8. Representativeness Evaluation and Data Usability Assessment

The purpose of a Representativeness Evaluation and Data Usability Assessment (REDUA) is to evaluate the extent to which a data set meets specific site characterization and data usability objectives. Most of the data on which this Partial Permanent Solution Statement relies was evaluated under the REDUA in the July 2008 Phase II/III. However, additional groundwater, indoor air and soil vapor samples have been collected since the Phase II/III, and the analytical results for some of those samples are included in the data set for this Partial Permanent Solution Statement. This Partial Permanent Solution Statement also relies on data collected by IES during a Subsurface Investigation for the adjacent property and 103 Washington Street.

This REDUA is in general accordance with MassDEP Policy #WSC-07-350, "MCP Representativeness Evaluations and Data Usability Assessments," dated September 19, 2007.

8.1. Conceptual Site Model

The CSM is in Section 1.6.

8.2. Field and Screening Data

Field data include physical parameter measurements made during soil, groundwater, sub-slab vapor, and indoor air sampling (e.g., total VOCs using a photoionization detector [PID], pH, temperature, conductivity, dissolved oxygen, barometric pressure etc.). Field and screening data were reviewed with the associated laboratory testing reports as part of the data quality assessment.

8.3. Sampling Rationale, Distribution, and Data Completeness

Environmental samples were submitted for chlorinated VOC testing consistent with the Site history and types of chemicals stored and used at the 50 Tufts Street property. Soil and groundwater samples collected by others were analyzed for petroleum hydrocarbons relating to the release from the Property's use as an automobile service and gasoline station.

8.3.1. Soil

To characterize soil at the Property, GEI relied on soil samples collected during monitoring well installation of IES-1, IES-4, IES-5, and IES-6. IES collected four soil samples at depths ranging from 5 to 15 feet during installation of monitoring wells IES-1, IES-4, IES-5, and IES-6.

8.3.2. Groundwater

GEI relied on groundwater data from IES-1, IES-5, and IES-6 collected during the subsurface investigation for RTN 3-34310. IES collected five groundwater samples during one round of groundwater sampling April 2017 from IES-1, IES-2, IES-4, IES-5, and IES-6.

Additionally, we relied on MW111/MW111R are located approximately 190 feet northwest and upgradient, MW103 is located approximately 235 feet northwest and upgradient of the Property, and MW122 is located approximately 75 feet northeast and crossgradient of the Property. Six groundwater samples were collected from MW111 between January 2007 and April 2008, one groundwater sample was collected from MW111R in March 2025, seven groundwater samples were collected from MW103 between May 2006 and April 2024, and thirty-eight groundwater samples were collected from MW122 between January 2008 and November 2024.

8.3.3. Soil Vapor

GEI collected sub-slab soil vapor samples from monitoring points 103Wash-SV1 and 103Wash-SV2 at the Property in May 2023, July 2023, March 2024, December 2024, and February 2025.

8.3.4. Indoor Air

GEI collected one indoor air sample from the first-floor commercial space in May 2023. We collected two indoor air samples from the first floor and the basement in July 2023 and March 2024. We collected four indoor air samples from the basement, first floor commercial space, and second floor residential space in December 2024 and February 2025.

8.3.5. Data Completeness

No data collected at the Property were rejected for quality assurance/quality control reasons. Data gaps related to sample distribution or data quality were not identified. Therefore, the data set is considered 100% complete. Inconsistent data were not identified. Field screening results, and observations such as visual and olfactory observations, were consistent with laboratory testing results. There is little uncertainty associated with the data used to support this Partial Permanent Solution Statement given the number of samples collected and the locations at which they were collected. All data collected were considered representative.

8.4. Data Usability Assessment

Laboratory testing data used to support this Partial Permanent Solution Statement were generated pursuant to the MassDEP Compendium of Analytical Methods (CAM) and 310 CMR 40.1056 and meet the criteria for “Presumptive Certainty” as identified in the MassDEP Document “WSC No. 10-320: Compendium of Quality Control Requirements and Performance Standards for Selected Analytical Protocols,” dated July 1, 2010. These data also are consistent with GEI’s field observations, are representative of conditions that exist or existed at the Property and are of a level of precision and accuracy commensurate with the preparation of this Partial Permanent Solution Statement.

8.5. Data Usability Criteria

The Precision Accuracy Representativeness Completeness Comparability and Sensitivity (PARCCS) parameters of the data were evaluated as part of field procedures, laboratories' analytical protocols, and GEI's in-house data review and validation process. Based on the results of the internal GEI data review, we applied qualifiers to the analytical data for some compounds in sub slab soil vapor and indoor air, as warranted. Qualifiers are presented in Table 3, Table 5, Table 6, and Table 7.

The following groundwater data for MW122 (for COPCs) obtained since the Phase II/III were qualified by the laboratory:

- In October 2008 and April 2009, the results for PCE were qualified as estimated due to duplicate precision being out of range.
- In April 2009, the concentration of PCE was qualified as being estimated due to the detection being below the laboratory reporting limit.
- In July 2009, the result for vinyl chloride was qualified as having a low bias due to matrix spike recovery below the control limits.
- In November 2014, the results for trans-1,2-DCE were qualified as having a high bias due to laboratory control sample recovery above the control limits and the result of vinyl chloride was qualified as having a low bias due to laboratory control sample recovery below the control limits.
- In April 2016, the results for 1,1,1-TCA and vinyl chloride were estimated due to the detection being below the laboratory reporting limit.
- GEI also reviewed the analytical reports for samples collected by IES and did not identify any qualifiers for Site COPCs.

These analytical results were considered sufficiently representative of conditions at and surrounding the Property and were included in the data set used to support this Partial Permanent Solution Statement.

8.6. Statement of Suitability

In summary, the data set relied upon in this Partial Permanent Solution Statement to characterize the conditions at the Property and perform a risk characterization is scientifically valid and defensible. It is of sufficient accuracy, precision, and completeness. In addition, the data set is representative of the spatial and temporal distribution of sampling points.

9. Partial Permanent Solution Statement

Based on the results of the 2008 Phase II/III risk characterization prepared for the Site and the 103 Washington Street Method 3 Risk Characterization, a condition of NSR of harm to human health, public welfare, safety, and the environment exists at the Property. An AUL is not required to maintain a condition of NSR at the Property.

A Partial Permanent Solution is appropriate for the Property since performance criteria have been met related to source elimination or control, migration control, and NAPL.

This Partial Permanent Solution only applies to the Property, which is a portion of the disposal site, as shown on Figure 2.

9.1. Source Elimination or Control (310 CMR 40.1040(1)(b))

There are no unpermitted releases of OHM at the Site, and the sources of OHM at the Site are eliminated to the extent feasible and are controlled.

9.2. Migration Control (310 CMR 40.1040(1)(c))

Construction dewatering was performed in Washington Street associated with the MBTA GLX Project between April 2019 and August 2020 as part of roadway reconstruction and utility installation. The construction dewatering expanded the Site plume to the south which did not return to pre-pumping conditions once dewatering was completed. However, the groundwater and soil vapor plumes at the Site are stable.

9.3. Non-Aqueous Phase Liquid (310 CMR 40.1040(1)(d))

Visible Non-Aqueous Phase Liquid (NAPL) has not been observed at the Site, and any Dense Non-Aqueous Phase Liquid (DNAPL) that may be present is not migrating and exists in a stable configuration. The Phase III for the Site demonstrated that it is not feasible to eliminate DNAPL.

9.4. Feasibility of Achieving or Approaching Background

The MCP requires an evaluation of the feasibility of achieving or approaching background when remedial actions are undertaken to achieve a Permanent Solution (310 CMR 40.1020). Remedial actions have not been taken to achieve the Permanent Solution for 103 Washington Street, therefore an evaluation on the feasibility of achieving background is not required.

9.5. Operation, Maintenance, and/or Monitoring

No additional response actions are required for the Property. No operation, maintenance, and/or monitoring are required at the Property. The Partial Permanent Solution does not rely upon the operation of Active Exposure Pathway Mitigation Measures.

9.6. Greener Cleanups

The MCP requires that site assessment and remediation eliminate or reduce the environmental footprint of cleanup activities to the maximum extent possible, per 310 CMR 40.0191(3)(e). This PSS addresses the requirements for conducting Greener Cleanups in general accordance with MassDEP's policy "Greener Cleanups Guidance" (Policy WSC #14-450). These include:

- Prepared, stored, and distributed documents electronically using an information management system.
- Contracted a laboratory that uses green practices and/or chemicals.
- Used a local laboratory to minimize transportation impacts.
- Used local staff (including subcontractors) to minimize transportation impacts.

9.7. Impacts of Climate Change on Site

As part of the assessment of climate change impacts to MCP sites, MassDEP has promulgated modifications to the MCP. Specifically, 310 CMR 40.1005(1) of the MCP redefines "Foreseeable Period of Time" to include consideration of "...existing site conditions and reasonably foreseeable future changes in site conditions, *including anticipated impacts associated with climate change.*" These considerations are addressed in this section.

The vulnerability of the Site to the effects of climate change can be viewed as the combination of the exposure of the Site to changing climatic conditions and the sensitivity of the Site to these changes. The field of climate change study is constantly evolving, and the 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan (<https://www.mass.gov/info-details/2023-resilientmass-plan>) currently identifies the vulnerability of a Site to be primarily resulting from the following four climate change interactions

- Changes in precipitation
- Sea level rise
- Rising temperatures
- Extreme weather

9.7.1. *Precipitation*

Climate change can affect the intensity and frequency of precipitation. Warmer oceans increase the amount of water that evaporates into the air. When more moisture-laden air moves over land or converges into a storm system, it can produce more intense precipitation, for example, heavier rain and snowstorms. The potential impacts of heavy precipitation include crop damage, soil erosion, and an increase in flood risk due to heavy rains, which in turn can lead to injuries, drownings, and other flooding-related effects on health.

Increased precipitation would not be expected to increase the rate of migration of chlorinated VOC contamination at the Site. VOC contamination in soil has only been detected at very low concentrations, including at the Property. Therefore, the solubility of chlorinated VOC contaminants, not the amount of leaching, limits the concentration of chlorinated VOC contaminants that would be expected to be found in groundwater at the Site.

Due to the location of the Site in Somerville, which is hydraulically connected to the Millers River (a tributary of the Charles River), it is not likely that significant increases in precipitation would result in an increase in the water table elevation, and migration of chlorinated VOC contamination is not anticipated.

9.7.2. *Sea Level Rise*

Sea level rise will impact coastal areas across Massachusetts. Many local variables influence the extent of damages from coastal flooding associated with sea level rise. Elevated coastal landforms, such as coastal banks and salt marshes, have the ability to buffer increased tidal levels as well as storm surges. As tidal ranges expand, water levels downstream of dams, bridges, and culverts may increase, reducing the drainage capacity of these structures and the upstream storage capacity. As a result, flooding over riverbanks may increase during heavy precipitation or snowmelt events. Where tidal restrictions do not exist, sea level rise may extend the reach of salt water up rivers.

The 103 Washington Property is located approximately 15 feet above sea level and approximately 1 mile from the Mystic River and 1.1 mile from the Charles River. Sea level rise would not be expected to increase the water table elevation at the Site.

9.7.3. *Temperature*

There is no universal definition for extreme temperatures. The term is relative to the usual weather in the region based on climatic averages. Extreme heat for Massachusetts is usually defined as a period of three or more consecutive days above 90 degrees Fahrenheit (°F), but more generally as a prolonged period of excessively hot weather, which may be accompanied by high humidity. Extreme cold is also considered relative to the normal climatic lows in a region.

Due to the volatile nature of shallow contamination (i.e., chlorinated VOCs) at the Site, increases in temperature have the potential to increase exposure to these contaminants at the Site. However, the depth to chlorinated VOC contamination at the Site is below the depth where changes in surface

temperature would impact soil temperature. Thus, temperature changes are not likely to impact migration or volatilization of the chlorinated VOC contamination.

9.7.4. Extreme Weather

Extreme weather events are occurrences of unusually severe weather or climate conditions that can cause devastating impacts on communities and agricultural and natural ecosystems. Weather-related extreme events are often short-lived and include heat waves, freezes, heavy downpours, tornadoes, severe winter storms, such as Nor'easters, tropical cyclones, and floods.

Increases in the intensity and frequency of severe weather may result in an increase in the possibility of flooding and/or erosion of the Site as the climate changes over time. Although this could increase the likelihood of mobilization of shallow surficial soils during flooding or severe weather, contaminated soil is not associated with the Property.

It is unlikely that such events would result in mobilization of contamination since there was limited and low detections of chlorinated VOCs at the Property. Additionally, the entire property has been redeveloped with the building, paved, or new landscaping and the Site is in a heavily developed area; therefore, extreme weather and flooding is unlikely to mobilize contamination at the Site.

10. Limitations

The conclusions provided by GEI in this report are based solely on the information reported in this document. Additional information which was not available to GEI may result in a modification of the conclusions stated above. This report has been prepared in accordance with generally accepted hydrogeological practices. In the event that a MassDEP audit is conducted, it is the responsibility of UniFirst Corporation, and not GEI, to respond to the MassDEP Notice of Audit Findings. No warranty, express or implied, is made.

11. References

MassDEP (2016). "Vapor Intrusion Guidance: Site Assessment, Mitigation and Closure, Policy # WSC-16-435", dated October 14.

MassDEP (2024). The Massachusetts Contingency Plan (MCP), 310 CMR 40.0000, March 1.

GEI (2008). Phase II Comprehensive Site Assessment, Method 3 Risk Characterization, and Phase III Remedial Action Plan, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated July 14.

GEI (2025). Phase V Status Report No. 27 and Remedial Monitoring Report No. 42, 50 Tufts Street, Somerville, MA, RTN 3-23246, dated February 11.

IES (2017). Release Abatement Measure Plan, 103 Washington Street, Somerville, MA, RTN 3-34310, dated June 5.

IES (2017). Release Abatement Measure Status Report No. 1, 103 Washington Street, Somerville, MA, RTN 3-34310, dated October 3.

IES (2017). Release Abatement Measure Completion Report, 103 Washington Street, Somerville, MA, RTN 3-34310, dated December 8.

IES (2017). Permanent Solution Statement, 103 Washington Street, Somerville, MA, RTN 3-34310, dated December 8.

Tables

Table 1 IES Chemical Testing Results - Soil

Table 1 Chemical Testing Data – IES Groundwater Sampling

Table 3 Chemical Testing Data – GEI Groundwater Sampling

Table 4 Groundwater Elevations

Table 5 Chemical Testing Data – GEI Subsurface Soil

Table 6 Chemical Testing Results - Sub-Slab Soil Gas

Table 7 Chemical Testing Data – Indoor Air

Table 8 Chemical Testing Results - Sump Water

Table 9 Summary Statistics for Soil

Table 10 Summary Statistics for Groundwater

Table 11 Sub-Slab Soil Vapor Data Summary Statistics

Table 12 Indoor Air Data Summary Statistics

Table 13 Indoor Air Exposure Point Concentration Summary

Table 1. IES Chemical Testing Results - Soil
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Location Name:					IES-1/S-2	IES-4/S-5	IES-5/S-4	IES-6/S-2	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-9
Sample Depth (ft):					5-10	10-15	10-15	5-10	8-11	12.5	8-11	8-11	10	9	11	7-11
PID Reading (ppm):					121	854	2	3	71	19	21.1	41.3	10	52	0	1
Sample Date:					4/6/17	4/6/17	4/6/17	4/6/17	9/11/17	9/11/17	9/11/17	9/11/17	10/18/17	10/18/17	10/18/17	10/19/17
Analyte	Method	Units	Method 1 S-1/GW-2	Method 1 S-1/GW-3												
Volatile Organic Compounds (VOCs)	8260	mg/kg			NT	NT		NT	NT	NT	NT	NT	NT	NT	NT	NT
Benzene			40	40												
Tetrachloroethylene (PCE)			4	100			0.19									
Trichloroethylene (TCE)			0.30	30			0.09									
Total VOCs			NS	NS			0.292									
Volatile Petroleum Hydrocarbons (VPH)	MAVPH	mg/kg					NT	NT								
C5-C8 Aliphatics			100	100	41	1700			<8.1	<6.7	<7.8	<9.8	<7.0	<6.3	<7.6	<7.5
C9-C12 Aliphatics			1000	1000	63	1900			<8.1	<6.7	<7.8	<9.8	<7.0	<6.3	<7.6	<7.5
C9-10 Aromatics			100	100	26	640			<8.1	<6.7	<7.8	<9.8	<7.0	<6.3	<7.6	<7.5
Naphthalene			20	500	0.44	5.0			<0.46	<0.37	<0.44	<0.54	<0.41	<0.35	<0.43	<0.42
Xylene, m,p-			100	500	0.71	<5.3			<0.46	<0.37	<0.44	<0.54	<0.41	<0.35	<0.43	<0.42
Xylene, o			100	500	<0.36	<5.3			<0.46	<0.37	<0.44	<0.54	<0.41	<0.35	<0.43	<0.42
Extractable Petroleum Hydrocarbons (EPH)	MAEPH	mg/kg			NT	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT
C9-C18 Aliphatics			1000	1000				<4.0								
C19-C36 Aliphatics			3000	3000				72								
C11-C22 Aromatics			1000	1000				49								

General Notes:

1. In general, analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
3. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective March 1, 2025.
4. Method 1 Standards (e.g., S-1/GW-2), where identified, are cited from the MCP.
5. NT= Not Tested
6. Sample shaded gray was excavated during IES RAM

Table 2. Chemical Testing Results - IES Groundwater Sampling
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

					Sample Location:	IES-1	IES-2	IES-4	IES-5	IES-6
					Well Screen Depth (ft bgs):	13	13	13	13	13
					Sample Date:	4/11/17	4/11/17	4/11/17	4/11/17	4/11/17
Analyte	Method	Units	Method 1 GW-2 Standard	Method 1 GW-3 Standard						
Volatile Organic Compounds (VOCs)	8260	µg/l					NT	NT		
2-Butanone (MEK)			50000	50000	<5				<5	8.5
cis-1,2-Dichloroethylene			20	50000	<1				18	<1
Methyl tert-butyl ether			50000	50000	<1				1.6	9.8
Tetrachloroethylene (PCE)			20	30000	<1				200	3.5
Trichloroethylene (TCE)			5	5000	<1				46.0	<1
Volatile Petroleum Hydrocarbons (VPH)	MAVPH	µg/l							NT	NT
C5-C8 Aliphatics			3000	50000	<100	<100	920			
C9-C12 Aliphatics			5000	50000	<100	<100	1300			
C9-C10 Aromatics			4000	50000	<100	<100	840			
Benzene			1000	10000	<1	<1	12			
Ethylbenzene			20000	5000	<1	<1	63			
Methyl tert-butyl ether			50000	50000	<5	<5	<5			
Naphthalene			700	20000	<5	<5	69			
Toluene			50000	40000	<1	<1	4.3			
m,p-Xylene			3000	5000	<2	<2	49			
o-Xylene			3000	5000	<1	<1	9.8			
Semivolatile Organic Compounds (SVOCs)	8270D SIM	µg/l					NT		NT	NT
2-Methylnaphthalene			2000	20000	<0.1		14			
Acenaphthene			NS	10000	<0.1		<0.11			
Acenaphthylene			10000	40	<0.1		<0.11			
Anthracene			NS	30	<0.1		<0.11			
Benz(a)anthracene			NS	1000	<0.02		0.09			
Benzo(a)pyrene			NS	500	<0.02		0.09			
Benzo(b)fluoranthene			NS	400	<0.02		0.17			
Benzo(g,h,i)perylene			NS	20	<0.1		0.16			
Benzo(k)fluoranthene			NS	100	<0.02		0.12			
Chrysene			NS	70	<0.02		0.18			
Dibenz(a,h)anthracene			NS	40	<0.01		0.05			
Fluoranthene			NS	200	<0.1		0.15			
Fluorene			NS	40	<0.1		<0.11			
Indeno(1,2,3-cd)pyrene			NS	100	<0.02		0.13			
Naphthalene			700	20000	0.15		33			
Phenanthrene			NS	10000	<0.07		0.17			
Pyrene			NS	20	<0.1		0.23			
Extractable Petroleum Hydrocarbons (EPH)							NT		NT	NT
C9-C18 Aliphatics			5000	50000	<100		<110			
C19-C36 Aromatics			NS	50000	<100		<110			
C11-C22 Aromatics			50000	5000	<100		<110			
Metals (Total)	6010B	µg/l					NT	NT	NT	NT
Arsenic			NS	900	<40					
Barium			NS	50000	84					
Cadmium			NS	8	<1					
Chromium			NS	300	<1					
Lead			NS	10	<2					
Mercury			NS	20	<0.2					
Selenium			NS	50	13					
Silver			NS	7	<1					

General Notes:

1. In general, analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
3. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective December 27, 2019.
4. Method 1 standards are cited from the MCP.
5. NT = Not Tested
6. ug/L = micrograms per liter.
7. NS = No standard or criteria has been established for this analyte.

Table 3. Chemical Testing Results - GEI Groundwater Sampling
Partial Permanent Solution Statement
 103 Washington Street
 Somerville, Massachusetts

Sample Location:					MW103	MW103	MW103	MW-103	MW103	MW103	MW103	MW111	MW111	MW111	MW111	MW111	MW111	MW111R	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	
Sample Name:					MW-103	MW103	MW103	MW-103	MW103	MW103	MW103	MW111	MW111	MW111	MW111	MW111	MW111	MW111R	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	
Well Screen Interval (ft bgs):					6 to 16	6 to 16	6 to 16	6 to 16	6 to 16	6 to 16	6 to 16	4 to 14	4 to 14	4 to 14	4 to 14	4 to 14	5 to 15	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16		
Sample Date:					5/24/06	8/7/06	10/5/06	1/16/07	1/18/07	4/13/07	4/3/24	1/18/07	4/16/07	7/18/07	10/10/07	1/10/08	4/17/08	3/7/25	1/30/08	4/17/08	7/14/08	10/22/08	1/12/09	4/13/09	7/15/09	10/14/09	4/12/10	10/27/10	4/20/11	11/16/11	4/17/12	11/12/12
Collected By:					GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	
Analyte	Method	Units	Method 1 GW 2 Standard	Method 1 GW 3 Standard																												
Volatile Organic Compounds (VOCs)																																
Acetone	8260	µg/l	50000	50000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25	<5.0	< 50	< 130	NT	< 250	< 5.0	< 10	8.0	< 5.0 J+	9.6 J	11.1	7.2	5.7	< 5.0	< 5.0 F-	< 10	3.8 J+	< 5.0	17.8	< 5.0	< 5.0	< 25 K-
Benzene			1000	10000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 2.5	<0.5	< 5.0	< 13	NT	< 25	< 0.50	< 1.0	<0.5	< 0.50	< 1.0	0.46 J	< 0.50	< 0.50	< 0.50	0.23 J	< 1.0	< 0.50	< 0.50	< 1.0	< 0.50	< 2.5	
Bromodichloromethane			6	50000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	<1.0	< 10	< 25	NT	< 50	< 1.0	< 2.0	<1.0	< 1.0	< 1.0	1.1 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 2.0	< 1.0	< 5.0	
2-Butanone (MEK)			50000	50000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25	<5	< 50	< 130	NT	< 250	< 5.0	< 10	<5.0	< 5.0 J+	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 25 K-	
Carbon disulfide			NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25	<2.0	< 50	< 130	NT	< 250	< 5.0	< 10	<2.0	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 F-	< 10	< 5.0	< 5.0	< 10	< 5.0	< 25	
Carbon tetrachloride			2	5000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	<1.0	< 10	< 25	< 1.0	< 50	< 1.0	< 2.0	<1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 5.0	
Chlorobenzene			200	1000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	<1.0	< 10	< 25	NT	< 50	< 1.0	< 2.0	<1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 5.0	
Chloroethane			NS	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 10	<2.0	< 20	< 50	< 2.0	< 100	< 2.0	< 4.0	<2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 F-	< 4.0	< 2.0	< 2.0	< 4.0	< 2.0	< 10	
Chloroform			50	20000	< 1.0	< 1.0	< 1.0	0.65 J	0.62 J	< 5.0	<1.0	< 10	< 25	NT	< 50	1.2	< 2.0	<1.0	< 1.0	< 2.0	< 1.0	0.61 J	< 1.0	< 1.0	< 1.0	0.75 J	< 1.0	< 1.0	< 2.0	< 1.0	< 5.0	
Chloromethane			NS	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 10	<2.0	< 20	< 50	NT	< 100	< 2.0	< 4.0	<2.0	< 2.0	< 4.0	< 2.0	< 2.0 J+	< 2.0	< 2.0	< 2.0 F-	< 4.0	< 2.0	< 2.0	< 4.0	< 2.0	< 10	
1,4-Dichlorobenzene			60	8000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	<1.0	< 10	< 25	NT	< 50	< 1.0	< 2.0	<1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 5.0	
1,1-Dichloroethane			2000	20000	27.2	3.7	13.0	11.5	10.1	7.9	<1.0	30.9	15.7 J	16.8	19.1 J	5.6	4.3 C+	<1.0	19.3	30.4 C+	10.1	15.0	16.0	25.8	21.2	20.8	29.6	20.3	19.1	15.2	17.2	14.4
1,2-Dichloroethane			5	20000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	<1.0	< 10	< 25	0.43 J	< 50	< 1.0	< 2.0	<1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 5.0	
1,1-Dichloroethylene			80	30000	13.4	2.0	6.5	4.3	4.3	8	<1.0	17.6	< 25	10.5	< 50	4.1	3.7 C+	<1.0	4.0	9.0 C+	1.4	4.4	3.4	6.1	5.3 F-	6.6	7.3	4.6	8.3	4.1	6.4	4.7 J
cis-1,2-Dichloroethylene			20	50000	< 1.0	3.0	2.5	< 1.0	< 1.0	< 5.0	<1.0	22.6	17.2 J	56.3	63.9	10.6	4.4 C+	7.0	60.6	70.7 C+	34.0	62.5	91.5	61.9	39.4	109.0	58.6	117	45.5	66.4	61.5	84.7
trans-1,2-Dichloroethylene			90	50000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	<1.0	< 10	< 25	1.5	< 50	< 1.0	< 2.0	<1.0	0.87 J	< 2.0	< 1.0	< 1.0	< 1.0	0.93 J	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 5.0	
1,2-Dichloropropane			3	50000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 10	<1.0	< 20	< 50	NT	< 100	< 2.0	< 4.0	<1.0	< 2.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 4.0	< 2.0	< 10	
1,4-Dioxane			5000	50000	< 25	< 25	< 25 R	< 25	< 25	< 130	<250	< 250	< 630	NT	< 1300	< 25	< 50	<250	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 50	< 25 K-	< 130	
Ethylbenzene			20000	5000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	<1.0	< 10	< 25	NT	< 50	< 1.0	< 2.0	<1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 5.0	
2-Hexanone			NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25	<5.0	< 50	< 130	NT	< 250	< 5.0	< 10	<5.0	< 5.0 J+	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 5.0	< 25		
4-Isopropyltoluene			NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25	<2.0	< 50	< 130	NT	< 250	< 5.0	< 10	<2.0	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 5.0	< 25		
Methyl tert-butyl ether			50000	50000	< 1.0	< 1.0	0.65 J J+	< 1.0	< 1.0	< 5.0	<2.0	< 10	< 25	NT	< 50	0.45 J	< 2.0	<2.0	3.3	3.9 C+	1.9	5.6	2.5	3.2	3.3	2.9	2.3	2.7	2.9	2.1	2.7	2.2 J
Methylene chloride			2000	50000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 10	<2.0	< 20	31.4 J	NT	< 100	< 2.0	< 4.0	<2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 4.0	< 2.0	< 10	
Naphthalene			700	20000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25	<2.0	< 50	< 130	NT	< 250	< 5.0	< 10	<2.0	< 5.0	< 10	2.6 J	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 10	< 5.0	< 25	
Tert-amyl methyl ether			NS	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 10	<2.0	< 20	< 50	NT	< 100	< 2.0	< 4.0	<2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 4.0	< 2.0	< 4.0	< 2.0	< 10	
1,1,1,2-Tetrachloroethane			10	50000	< 5.0	< 5.0	< 5.0	< 5.0 F+	< 5.0	< 25	<1.0	< 50	< 130	NT	< 250	< 5.0	< 10	<1.0	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 10	< 5.0	< 10	< 5.0	< 25	
Tetrachloroethylene (PCE)			20	30000	2600	592	1510	1200 F+	1250 F-	1510	43	13700 F-	7370	6340	8350	3100	1160 C+	74	477	691 C+	122	352 G	312	499 G	677	518	856	532	656	581	1000	811
Tetrahydrofuran			NS	NS	< 10	< 10	< 10	< 10	< 10	< 50	<2.0	< 100	< 250	NT	< 500	< 10	< 20	<2.0	< 10	< 20	< 10	< 10	< 10	< 10	< 10	< 20	< 10	< 10	< 10	< 10	< 50 F- K-	
Toluene			50000	40000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	<1.0	< 10	< 25	NT	< 50	< 1.0	< 2.0	<1.0	0.48 J	< 2.0	2.8	3.7	0.64 J	2.4	1.6	< 4.0	6.0	< 1.0	< 1.0	< 1.0	< 5.0	
1,1,1-Trichloroethane (TCA)			4000	20000	34.0	4.4	14.4 J+	17.6	21.0	< 5.0	<1.0	142	56.5	89.1	84.1	41.3	17.6 C+	<1.0	1.4	3.4 C+	0.63 J	5.1	1.1	1.7	1.7	< 2.0	1.5	< 1.0	7.5	1.4	2.2	< 5.0
1,1,2-Trichloroethane			900	50000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	<1.0	< 10	< 25	< 1.0	< 50	< 1.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	
Trichloroethylene (TCE)			5	5000	109	24.0	60.4	37.0	38.0	58.7	3.5	150	84.4	120	125	42.1	19.9 C+	5.3	177	106 C+	27.0	56.9	59.6	91.7	90.2	81.1	119.0	82.1	73.1	79.0	103	88.0
Vinyl chloride			2	50000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	<1.0	< 10	< 25	< 1.0	< 50	< 1.0	< 2.0	<1.0	0.32 J	< 2.0	< 1.0	< 1.0	1.2	< 1.0	< 1.0 F-	4.3	< 1.0	3.6	< 2.0	< 1.0	< 5.0	
m,p-Xylene			3000	5000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	<2.0	< 10	< 25	NT	< 50	< 1.0	< 2.0	<2.0	< 1.0	< 2.0	0.92 J	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	
o-Xylene			3000	5000	< 1.0	< 1.0	<																									

General Notes:

1. Analytes detected in at least one sample are reported here. For a complete list of analytes refer to the laboratory data reports.
2. ft bgs = feet below ground surface.
3. µg/l = micrograms per liter.
4. "c" = The analyte was not detected at a concentration above the specified reporting.
5. SHA = Sanborn Head & Associates.
6. FD = Field Duplicate Sample.
7. NT = Not Tested.
8. * = micrograms CaCO₃ per liter

Qualifying Notes:

- | | |
|----|---|
| C+ | The analyte found in associated method blank. |
| C+ | The result has a high bias due to surrogate recovery above upper control limits. |
| E | The value exceeds the calibration range. |
| F+ | The result has a high bias due to matrix spike recovery above upper control limits. |
| F- | The result has a low bias due to matrix spike recovery below lower control limits. |
| G | The result is estimated due to duplicate precision outside control limits. |
| J | The reported result is below the laboratory reporting limit and is estimated. |
| J+ | The reported result is estimated. |
| K- | The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits. |
| K+ | The result has a high bias due to blank spike or laboratory control sample recovery above upper control limits. |
| R | The result is rejected due to gross exceedence of minimum response factor criteria. |

Table 3. Chemical Testing Results - GEI Groundwater Sampling
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Sample Location: Sample Name: Well Screen Interval (ft bgs): Sample Date: Collected By:					MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122			
					MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122	MW122
					4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16	4 to 16
					4/23/13	11/18/13	4/30/14	11/18/14	4/2/15	11/19/15	4/28/16	11/21/16	4/17/2017	11/8/2017	4/3/2018	11/15/2018	4/16/2019	11/22/2019	4/16/2020	11/18/2020	4/13/2021	11/30/2021	4/13/2022	11/29/2022	4/17/2023	11/7/2023	4/4/2024	11/14/2024	
Analyte	Method	Units	Method 1 GW 2 Standard	Method 1 GW 3 Standard																									
Volatile Organic Compounds (VOCs)					8260	µg/l																							
Acetone			50000	50000	< 50	< 50 K-	< 20	< 20	< 20	< 10	9.4 J	< 40	< 50	< 10	<50	<50	<20	<50	<50	<50	<25	<100	<100	<50	<50	<5.0	<10	< 50	
Benzene			1000	10000	< 2.5	< 2.5	< 1.0	< 1.0	< 1.0	< 1.0	< 0.50	< 2.0	< 2.5	< 0.50	<2.5	<2.5	<1.0	<2.5	<5.0	<5.0	<2.5	<10	<10	<5	<5	<0.50	<1	< 5	
Bromodichloromethane			6	50000	< 5.0	< 5.0	< 2.0	< 2.0	< 2.0	< 2.0	< 1.0	< 4.0	< 5.0	< 1.0	<5.0	<5.0	<2.0	<5.0	<10	<10	<5.0	<20	<20	<10	<10	<1.0	<2.0	< 10	
2-Butanone (MEK)			50000	50000	< 25	< 25	< 10	< 10	< 10	17.3 J	< 10	< 40	< 50	< 10	<50	<50	<20	<50	<50	<50	<50	<100	<100	<50	<50	<5.0	<10	< 50	
Carbon disulfide			NS	NS	< 25	< 25	< 10	< 10	< 10	< 10	< 5.0	< 20	< 10	< 20	<10	<10	<4.0	<10	<20	<20	<5	<40	<40	<20	<20	<4.0	< 20	< 20	
Carbon tetrachloride			2	5000	< 5.0	< 5.0	< 2.0	< 2.0	< 2.0	< 2.0	< 1.0	< 4.0	< 5.0	< 1.0	<5.0	<5.0	<2.0	<5.0	<10	<10	<5	<20	<20	<10	<10	<1.0	<2.0	< 10	
Chlorobenzene			200	1000	< 5.0	< 5.0	< 2.0	< 2.0	< 2.0	< 2.0	< 1.0	< 4.0	< 5.0	< 1.0	<5.0	<5.0	<2.0	<5.0	<10	<10	<5.0	<20	<20	<10	<10	<1.0	<2.0	< 10	
Chloroethane			NS	NS	< 10	< 10	< 4.0	< 4.0 G	< 4.0	< 4.0	< 2.0	< 8.0	< 5.0	< 1.0	<5.0	<5.0	<2.0	<5.0	<20	<20	<10	<40	<40	<20	<20	<2.0	<4.0	< 20	
Chloroform			50	20000	< 5.0	< 5.0	< 2.0	< 2.0	< 2.0	< 2.0	< 1.0	< 4.0	< 5.0	< 1.0	<5.0	<5.0	<2.0	<5.0	<10	<10	<10	<20	<20	<10	<10	<1.0	<2.0	< 10	
Chloromethane			NS	NS	< 10	< 10	< 4.0	< 4.0 G	< 4.0	< 4.0	< 2.0	< 8.0	< 5.0	< 1.0	<5.0	<5.0	<2.0	<5.0	<20	<20	<10	<40	<40	<20	<20	<2.0	<4.0	< 20	
1,4-Dichlorobenzene			60	8000	< 5.0	< 5.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 5.0	< 1.0	<5.0	<5.0	<2.0	<5.0	<10	<10	<5	<20	<20	<10	<10	<1.0	<2.0	< 10	
1,1-Dichloroethane			2000	20000	11.1	12.7	15.9	12.8	15.0	6.8	18.3	20.5	30.9	14.8	22.7	17.0	18.8	16.4	29	48	44	46	35	24	18	16	3.1	12	
1,2-Dichloroethane			5	20000	< 5.0	< 5.0	< 2.0	< 2.0	< 2.0	< 2.0	< 1.0	< 4.0	< 5.0	< 1.0	<5.0	<5.0	<2.0	<5.0	<10	<10	<5.0	<20	<20	<10	<10	<1.0	<2.0	< 10	
1,1-Dichloroethylene			80	30000	4.1 J	4.4 J	5.1	3.8 K+	4.5	1.6 J	5.8	5.6	7.7	3.9	8.1	7.3	6.1	6.9	<10	12	6.9	<20	<20	<10	<10	7.7	<2.0	< 10	
cis-1,2-Dichloroethylene			20	50000	56.2	67.2	68.0	69.3	43.8	75.7	61.3	68.5	67.2	50	64.4	71.0	69.1	95.8	150	150	120	130	130	180	110	130	22	140	
trans-1,2-Dichloroethylene			90	50000	< 5.0	< 5.0	< 2.0	< 2.0 K+	< 2.0	< 2.0	< 1.0	< 4.0	< 5.0	< 1.0	<5.0	<5.0	<2.0	<5.0	<10	<10	<10	<20	<20	<10	<10	<1.0	<2.0	< 10	
1,2-Dichloropropane			3	50000	< 10	< 10	< 4.0	< 4.0	< 4.0	< 4.0	< 2.0	< 8.0	< 5.0	< 1.0	<5.0	<5.0	<2.0	<5.0	<10	<10	<10	<20	<20	<10	<10	<1.0	<2.0	< 10	
1,4-Dioxane			5000	50000	< 260	< 260	< 50 K-	< 50 K-	< 50	< 50	< 50	< 200	< 630	< 130	< 630	< 630	< 250	< 630	< 2500	< 2500	< 1200	< 5000	< 5000	< 2500	< 2500	< 500	< 2500		
Ethylbenzene			20000	5000	< 5.0	< 5.0	< 2.0	< 2.0	< 2.0	< 2.0	< 1.0	< 4.0	< 5.0	< 1.0	<5.0	<5.0	<2.0	<5.0	<10	<10	<5.0	<20	<20	<10	<10	<1.0	<2.0	< 10	
2-Hexanone			NS	NS	< 25	< 25 K-	< 10	< 10	< 10	< 10	< 10	< 40	< 25	< 5.0	< 25	< 25	< 2.0	< 25	< 50	< 50	< 25	< 100	< 100	< 50	< 50	< 10	< 50		
4-Isopropyltoluene			NS	NS	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 20	< 10	< 2.0	< 10	< 4.0	< 20	< 20	< 20	< 20	< 40	< 40	< 20	< 20	< 2.0	< 4.0	< 20		
Methyl tert-butyl ether			50000	50000	< 5.0 K-	< 5.0	1.5 J	2.6 K+	1.8	1.0 J	1.2	< 4.0	3.7	1.1	< 5.0	< 5.0	2.1	< 5.0	< 20	< 20	< 10	< 40	< 40	< 20	< 20	2.9	< 4.0	< 20	
Methylene chloride			2000	50000	< 10	< 10	< 4.0	< 4.0	< 4.0	1.1 J	< 2.0	39.4	< 10	< 2.0	< 10	< 4.0	< 10	< 20	< 20	< 20	< 20	< 40	< 40	< 20	< 20	< 2.0	< 4.0	< 20	
Naphthalene			700	20000	< 25	< 25	< 10	< 10	< 10	< 10	< 5.0	< 20	< 25	< 5.0	< 25	< 25	< 10	< 25	< 20	< 20	< 10	< 40	< 40	< 20	< 20	< 4.0	< 20	< 20	
Tert-amyl methyl ether			NS	NS	< 10	< 10	< 4.0	< 4.0	< 4.0	< 4.0	< 2.0	< 8.0	< 10	< 2.0	< 10	< 4.0	< 10	< 20	< 20	< 10	< 40	< 40	< 20	< 20	< 2.0	< 4.0	< 20		
1,1,1,2-Tetrachloroethane			10	50000	< 25	< 25	< 10	< 10	< 2.0	< 2.0	< 1.0	< 4.0	< 5.0	< 1.0	<5.0	<5.0	<2.0	<5.0	<10	<10	<10	<20	<20	<10	<1.0	<2.0	< 10	< 10	
Tetrachloroethylene (PCE)			20	30000	938	726	592	499	784	326	734	684	910	579	959	1150	1060	961	1200	1400	820	1600	1700	1200	1700	1600	170	1300	
Tetrahydrofuran			NS	NS	< 50	< 50	< 20 G	< 20	< 20	< 20	< 10	< 40	< 50	< 10	< 50	< 50	< 2.0	< 50	< 20	< 20	< 10	< 40	< 40	< 20	< 20	< 2.0	< 4.0	< 20	
Toluene			50000	40000	< 5.0	6	< 2.0	0.79 J	0.72	< 2.0	< 1.0	< 4.0	< 5.0	20.7	< 5.0	< 5.0	< 2.0	< 5.0	< 10	< 10	< 5.0	< 20	< 20	< 10	< 10	< 1.0	< 2.0	< 10	
1,1,1-Trichloroethane (TCA)			4000	20000	< 5.0	< 5.0	< 2.0	< 2.0	2.0	< 2.0	0.92 J	< 4.0	< 5.0	< 1.0	< 5.0	< 5.0	< 2.0	< 5.0	< 10	< 10	< 5.0	< 20	< 20	< 10	< 10	< 1.0	< 2.0	< 10	
1,1,2-Trichloroethane			900	50000	< 5.0	< 5.0	< 2.0	< 2.0	< 2.0	< 2.0	< 1.0	< 4.0	< 5.0	< 1.0	< 5.0	< 5.0	< 2.0	< 5.0	< 10	< 10	< 10	< 20	< 20	< 10	< 1.0	< 2.0	< 10	< 10	
Trichloroethylene (TCE)			5	5000	93.4	76.0	98.9	58.9	82.9	44.9	98.3	87.1	102.0	63.3	110.0	122	121	131	140	170	130	220	210	160	170	200	41	150	
Vinyl chloride			2	50000	< 5.0	< 5.0	< 2.0	< 2.0 K-	1.8	1.2	0.73 J	< 4.0	< 5.0	1.3	< 5.0	< 5.0	< 2.0	< 5.0	< 10	< 10	< 5.0	< 20	< 20	< 10	< 1.0	< 2.0	< 10	< 10	
m,p-Xylene			3000	5000	< 5.0	< 5.0	< 2.0	< 2.0	< 2.0	< 2.0	< 1.0	< 4.0	< 5.0	< 1.0	< 5.0	< 5.0	< 2.0	< 5.0	< 20	< 20	< 10	< 40	< 40	< 20	< 2.0	< 4.0	< 20	< 20	
o-Xylene			3000	5000	< 5.0	< 5.0	< 2.0	< 2.0	< 2.0	< 2.0	< 1.0	< 4.0	< 5.0	< 1.0	< 5.0	< 5.0	< 2.0	< 5.0	< 10	< 10	< 5.0	< 20	< 20	< 10	< 10	< 1.0	< 2.0	< 10	
Total Xylene			3000	5000	< 5.0	< 5.0	< 2.0	< 2.0	< 2.0	< 2.0	< 1.0	< 4.0	< 5.0	< 1.0	< 5.0	< 5.0	< 2.0	< 5.0	< 10	< 10	< 5.0	< 20	< 20	< 10	< 10	< 1.0	< 2.0	< 10	
Metals (Total)					6010B	µg/l																							
Arsenic			NS	900	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
Iron			NS	NS																									
Manganese			NS	NS																									
Metals (Dissolved)					6010C	µg/l																							
Iron			NS	NS	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
Others																													
Methane	8015	µg/l	NS	NS	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT</										

General Notes:

1. Analytes detected in at least one sample are reported here. For a complete list of analytes refer to the laboratory data reports.
2. ft bgs = feet below ground surface.
3. µg/l = micrograms per liter.
4. " $<$ " = The analyte was not detected at a concentration above the specified reporting.
5. SHA = Sanborn Head & Associates.
6. FD = Field Duplicate Sample.
7. NT = Not Tested.
8. * = micrograms CaCO₃ per liter

Qualifying Notes:

- B The analyte found in associated method blank.
C The result has a high bias due to surrogate recovery above upper control limits.
E The value exceeds the calibration range.
F The result has a high bias due to matrix spike recovery above upper control limits.
F- The result has a low bias due to matrix spike recovery below lower control limits.
G The result is estimated due to duplicate precision outside control limits.
J The reported result is below the laboratory reporting limit and is estimated.
J- The reported result is estimated.
K- The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.
K+ The result has a high bias due to blank spike or laboratory control sample recovery above upper control limits.
R The result is rejected due to gross exceedence of minimum response factor criteria.

Table 4. Groundwater Elevations
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Gauging Date:			5/15/2006		5/16/2006		5/23/2006		5/31/2006		7/24/2006		8/1/2006		8/3/2006		8/16/2006	
Monitoring Well ID	Well Screen Interval (ft bgs)	Elevation of Measuring Point (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)
MW-1	unknown	25.90	9.69	16.21	9.53	16.37	10.9	15	11.39	14.51	--	--	--	--	--	--	11.9	14
MW-2	unknown	25.38	8.99	16.39	10.36	15.02	Dry	Dry	Dry	Dry	--	--	--	--	--	--	Dry	Dry
MW-3	unknown	25.31	8.88	16.43	9.32	15.99	11.16	14.15	12.71	12.6	--	--	--	--	--	--	13.73	11.58
MW-101	9 - 19	26.75	--	--	10.56	16.19	11.53	15.22	12.1	14.65	12.33	14.42	12.51	14.24	13.47	13.28	12.78	13.97
MW-102	6 - 16	18.89	--	--	6.62	12.27	6.86	12.03	7.44	11.45	7.93	10.96	8.16	10.73	9.11	9.78	8.51	10.38
MW-103	6 - 16	19.47	--	--	9.5	9.97	10.37	9.1	10.74	8.73	11.15	8.32	11.31	8.16	12.24	7.23	11.72	7.75
MW-104	5 - 15	17.67	--	--	--	--	7.93	9.74	8.89	8.78	9.06	8.61	9.39	8.28	10.29	7.38	9.87	7.8
MW-104R	5 - 15	15.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-105	19 - 29	38.84	--	--	19.49	19.35	20.21	18.63	20.7	18.14	21.18	17.66	21.43	17.41	22.41	16.43	21.91	16.93
MW-106	9 - 19	26.33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-107	2 - 12	14.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-108	2 - 12	12.74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-109	3 - 13	24.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-110	3 - 13	15.58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-111	4 - 14	18.95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-111R	5 - 15	18.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-112	3 - 10	18.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-112a	4 - 19	17.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-113	10 - 20	26.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-114	7 - 17	29.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-115	10 - 25	27.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-116	5 - 15	13.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-117S	5 - 20	21.94	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-117T	35 - 45	21.87	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-117D	60 - 70	21.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-118S	3 - 14	15.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-118T	39.5 - 49.5	15.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-118D	70 - 80	15.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-119S	5 - 20	11.74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-119T	42 - 47	11.67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-120S	5 - 20	12.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-120D	28 - 38	12.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-121S	5 - 20	12.44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-121D	32 - 47	12.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-122	4 - 16	16.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GEO-1	5 - 20	25.88	9.69	16.19	9.9	15.98	10.92	14.96	11.36	14.52	--	--	--	--	--	--	11.82	14.06
GEO-2	5 - 20	26.54	9.76	16.78	--	--	11.38	15.16	11.91	14.63	--	--	--	--	--	--	12.51	14.03
GEO-3	5 - 20	25.64	10.43	15.21	9.59	16.05	9.87	15.77	10.67	14.97	11.67	13.97	11.85	13.79	12.84	12.8	12.25	13.39
GEO-4	4 - 19	21.69	--	--	7.79	13.9	9.85	11.84	10.78	10.91	11.25	10.44	11.45	10.24	12.43	9.26	11.9	9.79
GEO-5	5 - 20	20.14	--	--	6.78	13.36	9.08	11.06	9.96	10.18	10.29	9.85	10.56	9.58	11.51	8.63	10.99	9.15
GEO-6	5 - 20	17.62	--	--	5.66	11.96	7.39	10.23	8.23	9.39	8.43	9.19	8.73	8.89	9.64	7.98	9.25	8.37
SH-1	9 - 14	29.55	10.15	19.4	11.4	18.15	Dry	Dry	Dry	Dry	--	--	--	--	--	--	Dry	Dry
SH-2	7 - 14	29.64	5.71	23.93	7.86	21.78	12.07	17.57	12.22	17.42	--	--	--	--	--	--	11.98	17.66
SH-3	8 - 13	29.66	7.54	22.12	8.56	21.1	12.73	16.93	12.96	16.7	--	--	--	--	--	--	Dry	Dry
SH-4	11 - 16	29.63	13.53	16.1	13.48	16.15	14.48	15.15	15.02	14.61	--	--	--	--	--	--	15.09	14.54
SH-5	8 - 13	29.63	Dry	Dry	--	--	12.99	16.64	13.03	16.6	--	--	--	--	--	--	Dry	Dry
SH-MW1	10 - 30	24.02	6.72	17.3	--	--	11.44	12.58	12.18	11.84	--	--	--	--	--	--	13.09	10.93
SH-MW2	10 - 25	24.27	9.33	14.94	--	--	12.05	12.22	12.69	11.58	--	--	--	--	--	--	13.38	10.89
SH-MW2R	10 - 23	24.56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW3	10 - 24	22.31	7.8	14.51	--	--	10.26	12.05	11.03	11.28	--	--	--	--	--	--	13	9.31
MW201	11 - 21	27.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW202	10.5 - 20.5	27.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW203	6 - 18	21.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW203R	13 - 23	24.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- General Notes:**
- ft = feet.
 - bgs = below ground surface.
 - ID = identification.
 - GW = groundwater.
 - NAVD = North American Vertical Datum of 1988.
 - The top of the PVC riser was used as the measuring point for depth to groundwater.
 - "--" = Well not yet installed, abandoned, or not measured.
 - NM = Not measured.

Table 4. Groundwater Elevations
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Gauging Date:			9/29/2006		10/4/2006		11/14/2006		12/12/2006		1/16/2007		2/12/2007		3/14/2007		4/12/2007	
Monitoring Well ID	Well Screen Interval (ft bgs)	Elevation of Measuring Point (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)
MW-1	unknown	25.90	--	--	11.88	14.02	--	--	--	--	11.6	14.3	--	--	--	--	11.39	14.51
MW-2	unknown	25.38	--	--	--	--	--	--	--	--	Destroyed	Destroyed	--	--	--	--	--	--
MW-3	unknown	25.31	--	--	13.75	11.56	--	--	--	--	13.05	12.26	--	--	--	--	12.57	12.74
MW-101	9 - 19	26.75	12.85	13.9	12.76	13.99	12.25	14.5	12.57	14.18	12.4	14.35	12.81	13.94	12.34	14.41	12.11	14.64
MW-102	6 - 16	18.89	8.68	10.21	8.52	10.37	7.64	11.25	8.01	10.88	7.72	11.17	8.52	10.37	--	--	7.46	11.43
MW-103	6 - 16	19.47	11.98	7.49	11.92	7.55	11	8.47	11.21	8.26	10.88	8.59	11.74	7.73	11	8.47	10.66	8.81
MW-104	5 - 15	17.67	9.95	7.72	9.92	7.75	--	--	--	--	8.73	8.94	--	--	--	--	8.75	8.92
MW-104R	5 - 15	15.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-105	19 - 29	38.84	22.27	16.57	22.18	16.66	21.16	17.68	21.76	17.08	21.46	17.38	22.03	16.81	21.56	17.28	20.88	17.96
MW-106	9 - 19	26.33	--	--	--	--	--	--	--	--	--	--	12.27	14.06	12.91	13.42	11.65	14.68
MW-107	2 - 12	14.63	--	--	--	--	--	--	--	--	--	--	4.54	10.09	4.5	10.13	4.49	10.14
MW-108	2 - 12	12.74	--	--	--	--	--	--	--	--	--	--	4.93	7.81	4.02	8.72	9.91	2.83
MW-109	3 - 13	24.12	--	--	--	--	--	--	--	--	--	--	12.07	12.05	11.27	12.85	10.27	13.85
MW-110	3 - 13	15.58	--	--	--	--	--	--	--	--	--	--	5.99	9.59	1.46	14.12	1.04	14.54
MW-111	4 - 14	18.95	--	--	--	--	--	--	--	--	--	--	11.38	7.57	10.62	8.33	10.65	8.3
MW-111R	5 - 15	18.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-112	3 - 10	18.16	--	--	--	--	--	--	--	--	--	--	Dry	Dry	8.01	10.15	Dry	Dry
MW-112a	4 - 19	17.78	--	--	--	--	--	--	--	--	--	--	--	--	12.76	5.02	12.76	5.02
MW-113	10 - 20	26.16	--	--	--	--	--	--	--	--	--	--	--	--	11.66	14.5	11.44	14.72
MW-114	7 - 17	29.43	--	--	--	--	--	--	--	--	--	--	--	--	12.67	16.76	11.27	18.16
MW-115	10 - 25	27.15	--	--	--	--	--	--	--	--	--	--	--	--	17.19	9.96	16.21	10.94
MW-116	5 - 15	13.45	--	--	--	--	--	--	--	--	--	--	--	--	8.78	4.67	8.34	5.11
MW-117S	5 - 20	21.94	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-117T	35 - 45	21.87	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-117D	60 - 70	21.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-118S	3 - 14	15.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-118T	39.5 - 49.5	15.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-118D	70 - 80	15.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-119S	5 - 20	11.74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-119T	42 - 47	11.67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-120S	5 - 20	12.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-120D	28 - 38	12.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-121S	5 - 20	12.44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-121D	32 - 47	12.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-122	4 - 16	16.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GEO-1	5 - 20	25.88	--	--	11.85	14.03	--	--	--	--	11.55	14.33	--	--	--	--	11.36	14.52
GEO-2	5 - 20	26.54	--	--	12.51	14.03	--	--	--	--	12.2	14.34	--	--	--	--	11.97	14.57
GEO-3	5 - 20	25.64	12.37	2.84	12.35	13.29	11.63	14.01	11.72	13.92	11.58	14.06	12.21	13.43	11.49	14.15	10.76	14.88
GEO-4	4 - 19	21.69	12.09	9.6	12.04	9.65	10.58	11.11	11.31	10.38	10.77	10.92	11.83	9.86	11.03	10.66	10.51	11.18
GEO-5	5 - 20	20.14	11.21	8.93	11.15	8.99	9.47	10.67	10.48	9.66	9.73	10.41	11.02	9.12	10.15	9.99	9.7	10.44
GEO-6	5 - 20	17.62	9.41	8.21	9.26	8.36	7.65	9.97	8.82	8.8	8.11	9.51	9.3	8.32	8.54	9.08	8.32	9.3
SH-1	9 - 14	29.55	--	--	Dry	Dry	--	--	--	--	Dry	Dry	--	--	--	--	--	--
SH-2	7 - 14	29.64	--	--	12	17.64	--	--	--	--	Dry	Dry	--	--	--	--	--	--
SH-3	8 - 13	29.66	--	--	Dry	Dry	--	--	--	--	Dry	Dry	--	--	--	--	--	--
SH-4	11 - 16	29.63	--	--	15.1	14.53	--	--	--	--	Dry	Dry	--	--	--	--	--	--
SH-5	8 - 13	29.63	--	--	Dry	Dry	--	--	--	--	Dry	Dry	--	--	--	--	--	--
SH-MW1	10 - 30	24.02	--	--	13.17	10.85	--	--	--	--	12.21	11.81	--	--	--	--	12.01	12.01
SH-MW2	10 - 25	24.27	--	--	13.41	10.86	--	--	--	--	12.73	11.54	--	--	--	--	12.61	11.66
SH-MW2R	10 - 23	24.56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW3	10 - 24	22.31	--	--	12.04	10.27	--	--	--	--	11.04	11.27	--	--	--	--	10.81	11.5
MW201	11 - 21	27.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW202	10.5 - 20.5	27.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW203	6 - 18	21.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW203R	13 - 23	24.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- General Notes:**
- ft = feet.
 - bgs = below ground surface.
 - ID = identification.
 - GW = groundwater.
 - NAVD = North American Vertical Datum of 1988.
 - The top of the PVC riser was used as the measuring point for depth to groundwater.
 - "--" = Well not yet installed, abandoned, or not measured.
 - NM = Not measured.

Table 4. Groundwater Elevations
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Gauging Date:			5/29/2007		6/26/2007		7/16/2007		8/22/2007		9/27/2007		10/23/2007		11/30/2007		1/9/2008	
Monitoring Well ID	Well Screen Interval (ft bgs)	Elevation of Measuring Point (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)
MW-1	unknown	25.90	11.41	14.49	11.8	14.1	12.04	13.86	--	--	12.26	13.64	12.07	13.83	11.95	13.95	--	--
MW-2	unknown	25.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	unknown	25.31	14.89	10.42	13.6	11.71	13.94	11.37	--	--	14.34	10.97	13.94	11.37	13.75	11.56	12.86	12.45
MW-101	9 - 19	26.75	12.17	14.58	12.62	14.13	12.85	13.9	13.03	13.72	13.17	13.58	12.91	13.84	13.82	12.93	12.11	14.64
MW-102	6 - 16	18.89	6.72	12.17	8.36	10.53	8.74	10.15	9.08	9.81	9.35	9.54	8.97	9.92	8.01	10.88	7.46	11.43
MW-103	6 - 16	19.47	10.81	8.66	11.47	8.0	11.92	7.55	12.3	7.17	12.63	6.84	--	--	12.18	7.29	10.74	8.73
MW-104	5 - 15	17.67	--	--	9.62	8.05	10.09	7.58	10.36	7.31	10.61	7.06	10.31	7.36	10.07	7.6	8.86	8.81
MW-104R	5 - 15	15.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-105	19 - 29	38.84	20.86	17.98	21.55	17.29	22.13	16.71	22.79	16.05	23.18	15.66	22.96	15.88	22.74	16.1	21.39	17.45
MW-106	9 - 19	26.33	11.69	14.64	12.07	14.26	12.33	14	12.48	13.85	12.61	13.72	12.39	13.94	12.27	14.06	11.71	14.62
MW-107	2 - 12	14.63	4.46	10.17	4.48	10.15	4.52	10.11	4.75	9.88	4.51	10.12	4.47	10.16	4.44	10.19	4.35	10.28
MW-108	2 - 12	12.74	4.25	8.49	5.06	7.68	6.59	6.15	6.25	6.49	6.28	6.46	5.86	6.88	4.74	8.0	3.71	9.03
MW-109	3 - 13	24.12	10.73	13.39	11.76	12.36	12.24	11.88	Dry	Dry	Dry	Dry	Dry	Dry	12.78	11.34	10.64	13.48
MW-110	3 - 13	15.58	2.56	13.02	6.57	9.01	7.17	8.41	7.86	7.72	8.37	7.21	6.92	8.66	3.34	12.24	--	--
MW-111	4 - 14	18.95	10.68	8.27	11.11	7.84	11.54	7.41	11.96	6.99	12.34	6.61	11.99	6.96	12.27	6.68	10.51	8.44
MW-111R	5 - 15	18.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-112	3 - 10	18.16	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
MW-112a	4 - 19	17.78	12.67	5.11	12.81	4.97	12.88	4.9	--	--	12.95	4.83	12.8	4.98	--	--	12.43	5.35
MW-113	10 - 20	26.16	11.51	14.65	11.99	14.17	12.22	13.94	12.43	13.73	12.58	13.58	12.3	13.86	12.6	13.56	11.5	14.66
MW-114	7 - 17	29.43	11.53	17.9	12.88	16.55	15.57	13.86	14.24	15.19	14.84	14.59	14.66	14.77	14.31	15.12	12.08	17.35
MW-115	10 - 25	27.15	16.63	10.52	17.42	9.73	17.97	9.18	18.38	8.77	18.81	8.34	18.37	8.78	18.24	8.91	16.18	10.97
MW-116	5 - 15	13.45	8.65	4.8	8.76	4.69	--	--	8.85	4.6	8.91	4.54	8.83	4.62	--	--	8.6	4.85
MW-117S	5 - 20	21.94	--	--	--	--	15.27	6.67	15.7	6.24	16.03	5.91	16.2	5.74	15.95	5.99	13.97	7.97
MW-117T	35 - 45	21.87	--	--	--	--	15.95	5.92	16.38	5.49	16.81	5.06	16.91	4.96	16.58	5.29	14.58	7.29
MW-117D	60 - 70	21.78	--	--	--	--	15.87	5.91	16.26	5.52	16.69	5.09	16.77	5.01	16.44	5.34	14.46	7.32
MW-118S	3 - 14	15.52	--	--	--	--	11.64	3.88	9.84	5.68	10.2	5.32	9.42	6.1	9.4	6.12	8.55	6.97
MW-118T	39.5 - 49.5	15.30	--	--	--	--	10.36	4.94	10.51	4.79	10.74	4.56	10.68	4.62	10.5	4.8	9.93	5.37
MW-118D	70 - 80	15.15	--	--	--	--	10.18	4.97	10.32	4.83	10.55	4.6	10.49	4.66	10.25	4.9	9.55	5.6
MW-119S	5 - 20	11.74	--	--	--	--	--	--	4.91	6.83	4.99	6.75	4.93	6.81	4.85	6.89	4.63	7.11
MW-119T	42 - 47	11.67	--	--	--	--	--	--	6.45	5.22	6.8	4.87	6.72	4.95	6.57	5.1	5.82	5.85
MW-120S	5 - 20	12.54	--	--	--	--	--	--	5.25	7.29	5.35	7.19	4.71	7.83	4.62	7.92	3.51	9.03
MW-120D	28 - 38	12.45	--	--	--	--	--	--	--	--	4.21	8.24	3.94	8.51	3.48	8.97	3.17	9.28
MW-121S	5 - 20	12.44	--	--	--	--	--	--	--	--	--	--	7.36	5.08	7.41	5.03	7.24	5.2
MW-121D	32 - 47	12.81	--	--	--	--	--	--	--	--	--	--	7.92	4.89	7.75	5.06	6.95	5.86
MW-122	4 - 16	16.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GEO-1	5 - 20	25.88	11.38	14.5	11.73	14.15	11.93	13.95	12.1	13.78	12.21	13.67	11.98	13.9	11.91	13.97	11.41	14.47
GEO-2	5 - 20	26.54	11.99	14.55	12.4	14.14	13.6	12.94	12.81	13.73	12.91	13.63	12.63	13.91	12.57	13.97	12.02	14.52
GEO-3	5 - 20	25.64	11.04	14.6	11.94	13.7	--	--	12.7	12.94	12.94	12.7	12.61	13.03	12.54	13.1	10.99	14.65
GEO-4	4 - 19	21.69	10.87	10.82	11.64	10.05	12.09	9.6	12.55	9.14	13.02	8.67	12.64	9.05	12.47	9.22	11.72	9.97
GEO-5	5 - 20	20.14	10.01	10.13	10.79	9.35	11.25	8.89	11.74	8.4	11.18	8.96	11.72	8.42	12.62	7.52	9.92	10.22
GEO-6	5 - 20	17.62	8.25	9.37	8.9	8.72	9.5	8.12	9.92	7.7	10.22	7.4	9.96	7.66	9.96	7.66	8.21	9.41
SH-1	9 - 14	29.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-2	7 - 14	29.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-3	8 - 13	29.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-4	11 - 16	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-5	8 - 13	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW1	10 - 30	24.02	12.26	11.76	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW2	10 - 25	24.27	12.74	11.53	13.25	11.02	13.48	10.79	13.72	10.55	14.04	10.23	13.68	10.59	13.85	10.42	12.77	11.5
SH-MW2R	10 - 23	24.56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW3	10 - 24	22.31	--	--	11.72	10.59	12.08	10.23	12.43	9.88	12.79	9.52	12.41	9.9	12.05	10.26	11.55	10.76
MW201	11 - 21	27.51	--	--	--	--	--	--	13.71	13.8	13.83	13.68	13.58	13.93	13.5	14.01	12.98	14.53
MW202	10.5 - 20.5	27.82	--	--	--	--	--	--	13.99	13.83	14.08	13.74	13.88	13.94	13.81	14.01	13.41	14.41
MW203	6 - 18	21.80	--	--	--	--	--	--	14.05	7.75	14.39	7.41	13.86	7.94	13.61	8.19	12.86	8.94
MW203R	13 - 23	24.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- General Notes:**
- ft = feet.
 - bgs = below ground surface.
 - ID = identification.
 - GW = groundwater.
 - NAVD = North American Vertical Datum of 1988.
 - The top of the PVC riser was used as the measuring point for depth to groundwater.
 - "--" = Well not yet installed, abandoned, or not measured.
 - NM = Not measured.

Table 4. Groundwater Elevations
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Gauging Date:			2/26/2008		3/18/2008		4/15/2008		5/19/2008		7/14/08		8/22/08		10/20/08		1/13/09	
Monitoring Well ID	Well Screen Interval (ft bgs)	Elevation of Measuring Point (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)
MW-1	unknown	25.90	--	--	--	--	11.42	14.48	11.57	14.33	--	--	--	--	--	--	--	--
MW-2	unknown	25.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	unknown	25.31	12.05	13.26	12.37	12.94	12.81	12.5	12.99	--	--	--	--	--	--	--	12.49	12.82
MW-101	9 - 19	26.75	--	--	11.85	14.9	12.02	14.73	12.26	14.49	13.11	13.64	--	--	12.61	14.14	12.07	14.68
MW-102	6 - 16	18.89	7.29	11.6	7.17	11.72	8.57	10.32	7.9	10.99	9.51	9.38	8.00	10.89	8.49	10.4	7.50	11.39
MW-103	6 - 16	19.47	10.51	8.96	10.5	8.97	10.82	8.65	11.11	8.36	12.17	7.30	11.17	8.30	11.87	7.6	10.73	8.74
MW-104	5 - 15	17.67	8.61	9.06	8.48	9.19	9.84	7.83	9.25	8.42	9.67	8.00	9.06	8.61	9.72	7.95	8.71	8.96
MW-104R	5 - 15	15.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-105	19 - 29	38.84	20.79	18.05	20.41	18.43	20.91	17.93	21.24	17.6	22.02	16.82	21.40	17.44	21.8	17.04	20.9	17.94
MW-106	9 - 19	26.33	11.51	14.82	11.38	14.95	12.54	13.79	11.72	14.61	11.68	14.65	11.73	14.60	11.64	14.69	11.6	14.73
MW-107	2 - 12	14.63	--	--	4.46	10.17	5.58	9.05	--	--	4.52	10.11	4.41	10.22	4.49	10.14	4.5	10.13
MW-108	2 - 12	12.74	4.61	8.13	3.68	9.06	3.91	8.83	3.99	8.75	5.16	7.58	4.44	8.30	4.71	8.03	3.4	9.34
MW-109	3 - 13	24.12	10.06	14.06	10.02	14.1	11.64	12.48	11.29	12.83	11.87	12.25	11.18	12.94	11.73	12.39	10.43	13.69
MW-110	3 - 13	15.58	0.79	14.79	1.12	14.46	1.57	14.01	2.5	13.08	--	--	3.59	11.99	--	--	1.45	14.13
MW-111	4 - 14	18.95	10.5	8.45	10.54	8.41	16.64	2.31	10.71	8.24	12.23	6.72	10.73	8.22	11.37	7.58	10.55	8.4
MW-111R	5 - 15	18.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-112	3 - 10	18.16	Dry	Dry	--	--	--	--	--	--	--	--	8.33	9.83	--	--	--	--
MW-112a	4 - 19	17.78	12.52	5.26	12.61	5.17	13.71	4.07	12.77	5.01	13.56	4.22	12.93	4.85	13.01	4.77	12.78	5.0
MW-113	10 - 20	26.16	11.28	14.88	11.15	15.01	11.39	14.77	11.62	14.54	12.01	14.15	11.63	14.53	11.99	14.17	11.41	14.75
MW-114	7 - 17	29.43	11.11	18.32	10.75	18.68	12.42	17.01	12.3	17.13	13.24	16.19	12.21	17.22	13.19	16.24	11.25	18.18
MW-115	10 - 25	27.15	15.85	11.3	15.86	11.29	16.45	10.7	16.72	10.43	18.49	8.66	16.78	10.37	17.8	9.35	16.35	10.8
MW-116	5 - 15	13.45	8.68	4.77	8.77	4.68	8.85	4.6	8.88	4.57	9.09	4.36	9.01	4.44	--	--	8.94	--
MW-117S	5 - 20	21.94	13.52	8.42	13.5	8.44	14.22	7.72	14.6	7.34	14.99	6.95	13.90	8.04	14.67	7.27	14.02	7.92
MW-117T	35 - 45	21.87	13.97	7.9	13.9	7.97	14.67	7.2	14.94	6.93	15.68	6.19	15.27	6.60	15.26	6.61	14.45	7.42
MW-117D	60 - 70	21.78	13.86	7.92	13.81	7.97	14.51	7.27	14.89	6.89	15.61	6.17	14.67	7.11	15.27	6.51	14.3	7.48
MW-118S	3 - 14	15.52	8.34	7.18	8.4	7.12	10	5.52	9.38	6.14	9.64	5.88	8.48	7.04	9.05	6.47	8.41	7.11
MW-118T	39.5 - 49.5	15.30	9.49	5.81	9.53	5.77	9.83	5.47	9.94	5.36	10.35	4.95	9.92	5.38	10.19	5.11	9.73	5.57
MW-118D	70 - 80	15.15	9.3	5.85	9.35	5.8	9.64	5.51	9.8	5.35	10.11	5.04	9.70	5.45	9.99	5.16	9.54	5.61
MW-119S	5 - 20	11.74	4.6	7.14	4.56	7.18	4.91	6.83	4.92	6.82	4.94	6.80	6.08	5.66	4.08	7.66	4.41	7.33
MW-119T	42 - 47	11.67	5.63	6.04	5.78	5.89	5.97	5.7	6.1	5.57	6.52	5.15	4.52	7.15	6.78	4.89	5.85	5.82
MW-120S	5 - 20	12.54	4.06	8.48	4.0	8.54	5.1	7.44	4.57	7.97	5.18	7.36	4.61	7.93	4.01	8.53	4.03	8.51
MW-120D	28 - 38	12.45	2.96	9.49	3.11	9.34	3.26	9.19	3.44	9.01	3.82	8.63	2.90	9.55	3.32	9.13	3.18	9.27
MW-121S	5 - 20	12.44	7.36	5.08	7.41	5.03	9.39	3.05	7.29	5.15	9.21	3.23	7.70	4.74	9.01	3.43	7.68	4.76
MW-121D	32 - 47	12.81	6.83	5.98	6.91	5.9	7.31	5.5	7.27	5.54	7.64	5.17	7.30	5.51	9.64	3.17	7.07	5.74
MW-122	4 - 16	16.42	12.98	3.44	13	3.42	13.03	3.39	12.99	3.43	13.15	3.27	13.17	3.25	11.42	5.0	13.15	3.27
GEO-1	5 - 20	25.88	11.22	14.66	--	--	11.25	14.63	11.4	14.48	12.32	13.56	12.00	13.88	12.14	13.74	11.26	14.62
GEO-2	5 - 20	26.54	11.77	14.77	--	--	12.81	13.73	12.01	14.53	11.73	14.81	11.41	15.13	11.58	14.96	11.88	14.66
GEO-3	5 - 20	25.64	10.71	14.93	--	--	10.97	14.67	--	--	12.05	13.59	11.57	14.07	--	--	--	--
GEO-4	4 - 19	21.69	10.36	11.33	10.34	11.35	11.46	10.23	11.13	10.56	11.60	10.09	11.16	10.53	11.89	9.8	10.56	11.13
GEO-5	5 - 20	20.14	9.42	10.72	9.52	10.62	10.8	9.34	10.21	9.93	10.89	9.25	10.28	9.86	11.79	8.35	9.70	10.44
GEO-6	5 - 20	17.62	7.78	9.84	7.86	9.76	9.11	8.51	8.51	9.11	9.20	8.42	7.91	9.71	10.95	6.67	8.02	9.6
SH-1	9 - 14	29.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-2	7 - 14	29.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-3	8 - 13	29.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-4	11 - 16	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-5	8 - 13	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW1	10 - 30	24.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW2	10 - 25	24.27	12.49	11.78	12.46	11.81	13.62	10.65	12.89	11.38	11.83	12.44	12.92	11.35	12.01	12.26	12.63	11.64
SH-MW2R	10 - 23	24.56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW3	10 - 24	22.31	10.68	11.63	10.65	11.66	11.83	10.48	11.21	11.1	13.27	9.04	11.30	11.01	12.49	9.82	10.87	11.44
MW201	11 - 21	27.51	12.76	14.75	12.64	14.87	12.85	14.66	13.94	13.57	13.31	14.2	13.00	14.51	14.64	12.87	13.27	14.24
MW202	10.5 - 20.5	27.82	13.22	14.6	13.12	14.7	12.73	15.09	13.37	14.45	13.68	14.14	13.41	14.41	13.29	14.53	12.82	15
MW203	6 - 18	21.80	12.03	9.77	12	9.8	13.31	8.49	12.68	9.12	13.15	8.65	12.55	9.25	13.02	8.78	12.25	9.55
MW203R	13 - 23	24.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- General Notes:**
- ft = feet.
 - bgs = below ground surface.
 - ID = identification.
 - GW = groundwater.
 - NAVD = North American Vertical Datum of 1988.
 - The top of the PVC riser was used as the measuring point for depth to groundwater.
 - "--" = Well not yet installed, abandoned, or not measured.
 - NM = Not measured.

Table 4. Groundwater Elevations
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Gauging Date:			4/13/09		7/14/09		10/14/09		4/12/10		10/27/10		4/20/11		11/16/11		4/16/12	
Monitoring Well ID	Well Screen Interval (ft bgs)	Elevation of Measuring Point (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)
MW-1	unknown	25.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	unknown	25.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	unknown	25.31	12.28	13.03	12.92	12.39	13.19	12.12	--	--	--	--	--	--	--	--	--	--
MW-101	9 - 19	26.75	11.91	14.84	12.2	14.55	12.37	14.38	11.61	15.14	--	--	11.73	15.02	--	--	12.71	14.04
MW-102	6 - 16	18.89	7.35	11.54	7.85	11.04	7.99	10.9	7.11	11.78	--	--	7.04	11.85	--	--	8.53	10.36
MW-103	6 - 16	19.47	10.57	8.9	11.07	8.4	11.34	8.13	10.47	9.00	--	--	10.39	9.08	--	--	11.79	7.68
MW-104	5 - 15	17.67	7.98	9.69	8.84	8.83	9.38	8.29	8.52	9.15	--	--	9.28	8.39	--	--	10.24	7.43
MW-104R	5 - 15	15.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-105	19 - 29	38.84	20.65	18.19	21.4	17.44	21.8	17.04	19.84	19.00	--	--	20.63	18.21	--	--	--	--
MW-106	9 - 19	26.33	11.49	14.84	overflowing	--	overflowing	--	11.16	15.17	--	--	11.39	14.94	--	--	--	--
MW-107	2 - 12	14.63	4.47	10.16	overflowing	--	overflowing	--	4.31	10.32	--	--	4.43	10.2	--	--	--	--
MW-108	2 - 12	12.74	3.73	9.01	4.37	8.37	4.66	8.08	3.86	8.88	--	--	3.56	9.18	--	--	4.72	8.02
MW-109	3 - 13	24.12	10.4	13.72	11.11	13.01	--	--	9.88	14.24	--	--	10.10	14.02	--	--	12.15	11.97
MW-110	3 - 13	15.58	1.1	14.48	2.88	12.7	2.42	13.16	1.39	14.19	--	--	1.67	13.91	--	--	--	--
MW-111	4 - 14	18.95	10.56	8.39	10.67	8.28	10.41	8.54	10.57	8.38	--	--	10.62	8.33	--	--	11.6	7.35
MW-111R	5 - 15	18.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-112	3 - 10	18.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-112a	4 - 19	17.78	12.63	5.15	12.78	5.0	12.58	5.2	12.62	5.16	12.31	5.47	12.14	5.64	12.30	5.48	12.70	5.08
MW-113	10 - 20	26.16	11.23	14.93	11.56	14.6	11.73	14.43	10.93	15.23	--	--	11.00	15.16	--	--	12.11	14.05
MW-114	7 - 17	29.43	10.97	18.46	12.04	17.39	--	--	10.24	19.19	--	--	10.46	18.97	--	--	13.70	15.73
MW-115	10 - 25	27.15	15.4	11.75	16.58	10.57	17.4	9.75	16.43	10.72	--	--	16.22	10.93	--	--	18.51	8.64
MW-116	5 - 15	13.45	8.87	4.58	8.97	4.48	8.76	4.69	8.85	4.6	--	--	8.32	5.13	--	--	--	--
MW-117S	5 - 20	21.94	14.38	7.56	14.66	7.28	14.75	7.19	13.32	8.62	--	--	14.06	7.88	--	--	9.06	12.88
MW-117T	35 - 45	21.87	14.43	7.44	15.03	6.84	15.26	6.61	13.56	8.31	--	--	14.18	7.69	--	--	15.58	6.29
MW-117D	60 - 70	21.78	14.26	7.52	14.89	6.89	15.13	6.65	13.48	8.3	--	--	14.01	7.77	--	--	15.81	5.97
MW-118S	3 - 14	15.52	--	6.82	9.43	6.09	9.01	6.51	8.31	7.21	--	--	8.55	6.97	--	--	9.66	5.86
MW-118T	39.5 - 49.5	15.30	9.64	5.66	9.92	5.38	9.99	5.31	9.49	5.81	--	--	9.33	5.97	--	--	10.30	5
MW-118D	70 - 80	15.15	9.47	5.68	9.74	5.41	9.73	5.42	9.29	5.86	--	--	9.15	6.00	--	--	10.11	5.04
MW-119S	5 - 20	11.74	4.21	7.53	4.47	7.27	4.33	7.41	4.33	7.41	--	--	4.08	7.66	--	--	5.14	6.6
MW-119T	42 - 47	11.67	5.8	5.87	6.04	5.63	6.01	5.66	5.68	5.99	--	--	5.55	6.12	--	--	6.50	5.17
MW-120S	5 - 20	12.54	3.85	8.69	4.31	8.23	3.58	8.96	3.98	8.56	--	--	3.65	8.89	--	--	4.78	7.76
MW-120D	28 - 38	12.45	3.11	9.34	3.31	9.14	3.29	9.16	3.04	9.41	--	--	3.18	9.27	--	--	3.87	8.58
MW-121S	5 - 20	12.44	7.57	4.87	7.62	4.82	7.71	4.73	7.67	4.77	--	--	7.12	5.32	--	--	7.26	5.18
MW-121D	32 - 47	12.81	6.98	5.83	7.27	5.54	7.37	5.44	6.87	5.94	--	--	6.77	6.04	--	--	7.69	5.12
MW-122	4 - 16	16.42	13.16	3.26	13.14	3.28	13.12	3.3	13.09	3.33	13.04	3.38	13.06	3.36	13.16	3.26	13.1	3.32
GEO-1	5 - 20	25.88	11.07	14.81	11.31	14.57	11.54	14.34	17.06	8.82	--	--	10.92	14.96	--	--	--	--
GEO-2	5 - 20	26.54	11.7	14.84	11.99	14.55	12.25	14.29	11.41	15.13	--	--	10.55	15.99	--	--	11.81	14.73
GEO-3	5 - 20	25.64	10.86	14.78	11.48	14.16	11.79	13.85	10.27	15.37	--	--	10.62	15.02	--	--	12.21	13.43
GEO-4	4 - 19	21.69	10.21	11.48	11.00	10.69	--	--	10.26	11.43	--	--	--	--	--	--	11.98	9.71
GEO-5	5 - 20	20.14	9.30	10.84	10.08	10.06	10.44	9.7	9.48	10.66	--	--	9.18	10.96	--	--	11.18	8.96
GEO-6	5 - 20	17.62	7.48	10.14	8.18	9.44	8.66	8.96	7.62	10	--	--	7.63	9.99	--	--	9.54	8.08
SH-1	9 - 14	29.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-2	7 - 14	29.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-3	8 - 13	29.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-4	11 - 16	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-5	8 - 13	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW1	10 - 30	24.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW2	10 - 25	24.27	12.33	11.94	12.77	11.5	13.01	11.26	10.61	13.66	--	--	12.29	11.98	--	--	13.53	10.74
SH-MW2R	10 - 23	24.56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW3	10 - 24	22.31	10.52	11.79	11.12	11.19	11.46	10.85	12.39	9.92	--	--	10.46	11.85	--	--	12.00	10.31
MW201	11 - 21	12.69	12.69	14.82	12.94	14.57	13.09	14.42	12.42	15.09	--	--	12.57	14.94	--	--	13.43	14.08
MW202	10.5 - 20.5	27.82	13.15	14.67	13.33	14.49	13.55	14.27	12.94	14.88	--	--	13.02	14.80	--	--	--	--
MW203	6 - 18	21.80	11.5	10.3	12.29	9.51	12.77	9.03	12.03	9.77	--	--	11.83	9.97	--	--	13.85	7.95
MW203R	13 - 23	24.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- General Notes:**
- ft = feet.
 - bgs = below ground surface.
 - ID = identification.
 - GW = groundwater.
 - NAVD = North American Vertical Datum of 1988.
 - The top of the PVC riser was used as the measuring point for depth to groundwater.
 - "--" = Well not yet installed, abandoned, or not measured.
 - NM = Not measured.

Table 4. Groundwater Elevations
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Gauging Date:			11/12/12		4/23/13		11/18/13		4/30/14		6/11/14		11/18/14		4/1/15		4/17/15	
Monitoring Well ID	Well Screen Interval (ft bgs)	Elevation of Measuring Point (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)
MW-1	unknown	25.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	unknown	25.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	unknown	25.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-101	9 - 19	26.75	--	--	12.41	14.34	--	--	12.03	14.72	--	--	--	--	--	--	--	--
MW-102	6 - 16	18.89	--	--	8.01	10.88	--	--	7.68	11.21	--	--	--	--	6.99	11.9	--	--
MW-103	6 - 16	19.47	--	--	11.22	8.25	--	--	10.96	8.51	--	--	--	--	10.43	9.04	--	--
MW-104	5 - 15	17.67	--	--	9.64	8.03	--	--	9.5	8.17	--	--	--	--	8.04	9.63	--	--
MW-104R	5 - 15	15.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-105	19 - 29	38.84	--	--	21.31	17.53	--	--	--	--	--	--	--	--	--	--	--	--
MW-106	9 - 19	26.33	--	--	--	--	--	--	11.71	14.62	--	--	--	--	--	--	--	--
MW-107	2 - 12	14.63	--	--	--	--	--	--	3.61	11.02	--	--	--	--	--	--	--	--
MW-108	2 - 12	12.74	--	--	4.34	8.4	--	--	4.09	8.65	--	--	--	--	3.31	9.43	--	--
MW-109	3 - 13	24.12	--	--	11.37	12.75	--	--	10.79	13.33	--	--	--	--	9.61	14.51	--	--
MW-110	3 - 13	15.58	--	--	--	--	--	--	2.61	12.97	--	--	--	--	0.60	14.98	--	--
MW-111	4 - 14	18.95	--	--	11.01	7.94	--	--	10.96	7.99	--	--	--	--	10.80	8.15	--	--
MW-111R	5 - 15	18.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-112	3 - 10	18.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-112a	4 - 19	17.78	12.72	5.06	12.80	4.98	13.11	4.67	--	--	12.86	4.92	12.39	5.39	--	--	12.86	4.92
MW-113	10 - 20	26.16	--	--	11.73	14.43	--	--	11.42	14.74	--	--	--	--	10.64	15.52	--	--
MW-114	7 - 17	29.43	--	--	12.24	17.19	--	--	12.05	17.38	--	--	--	--	10.06	19.37	--	--
MW-115	10 - 25	27.15	--	--	17.76	9.39	--	--	17.51	9.64	--	--	--	--	16.50	10.65	--	--
MW-116	5 - 15	13.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-117S	5 - 20	21.94	--	--	14.39	7.55	--	--	13.63	8.31	--	--	--	--	9.66	12.28	--	--
MW-117T	35 - 45	21.87	--	--	15.19	6.68	--	--	14.78	7.09	--	--	--	--	13.95	7.92	--	--
MW-117D	60 - 70	21.78	--	--	15.09	6.69	--	--	14.71	7.07	--	--	--	--	13.88	7.90	--	--
MW-118S	3 - 14	15.52	--	--	9.41	6.11	--	--	9.01	6.51	--	--	--	--	8.04	7.48	--	--
MW-118T	39.5 - 49.5	15.30	--	--	10.12	5.18	--	--	9.94	5.36	--	--	--	--	9.63	5.67	--	--
MW-118D	70 - 80	15.15	10.03	5.12	10.00	5.15	10.73	4.42	9.82	5.33	--	--	10.20	4.95	9.47	5.68	--	--
MW-119S	5 - 20	11.74	--	--	4.70	7.04	--	--	4.31	7.43	--	--	--	--	4.16	7.58	--	--
MW-119T	42 - 47	11.67	--	--	6.25	5.42	--	--	6.11	5.56	--	--	--	--	5.80	5.87	--	--
MW-120S	5 - 20	12.54	--	--	4.26	8.28	--	--	4.19	8.35	--	--	--	--	3.54	9.00	--	--
MW-120D	28 - 38	12.45	--	--	3.40	9.05	--	--	4.41	8.04	--	--	--	--	3.10	9.35	--	--
MW-121S	5 - 20	12.44	--	--	6.93	5.51	--	--	5.95	6.49	--	--	--	--	6.77	5.67	--	--
MW-121D	32 - 47	12.81	7.55	5.26	7.41	5.4	8.13	4.68	7.35	5.46	--	--	7.27	5.54	7.01	5.80	--	--
MW-122	4 - 16	16.42	13.16	3.26	13.14	3.28	13.12	3.3	13.12	3.30	--	--	13.04	3.38	13.15	3.27	--	--
GEO-1	5 - 20	25.88	--	--	11.50	14.38	--	--	11.19	14.69	--	--	--	--	10.69	15.19	--	--
GEO-2	5 - 20	26.54	--	--	12.19	14.35	--	--	11.99	14.55	--	--	--	--	11.34	15.20	--	--
GEO-3	5 - 20	25.64	--	--	11.57	14.07	--	--	11.10	14.54	--	--	--	--	9.92	15.72	--	--
GEO-4	4 - 19	21.69	--	--	11.29	10.4	--	--	11.09	10.6	--	--	--	--	10.17	11.52	--	--
GEO-5	5 - 20	20.14	--	--	10.45	9.69	--	--	10.25	9.89	--	--	--	--	9.29	10.85	--	--
GEO-6	5 - 20	17.62	--	--	8.56	9.06	--	--	8.30	9.32	--	--	--	--	7.84	9.78	--	--
SH-1	9 - 14	29.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-2	7 - 14	29.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-3	8 - 13	29.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-4	11 - 16	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-5	8 - 13	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW1	10 - 30	24.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW2	10 - 25	24.27	--	--	13.13	11.14	--	--	12.95	11.32	--	--	--	--	12.41	11.86	--	--
SH-MW2R	10 - 23	24.56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW3	10 - 24	22.31	--	--	11.43	10.88	--	--	11.23	11.08	--	--	--	--	10.55	11.76	--	--
MW201	11 - 21	27.51	--	--	13.15	14.36	--	--	12.97	14.54	--	--	--	--	12.40	15.11	--	--
MW202	10.5 - 20.5	27.82	--	--	13.54	14.28	--	--	13.32	14.50	--	--	--	--	12.93	14.89	--	--
MW203	6 - 18	21.80	--	--	13.15	8.65	--	--	12.92	8.88	--	--	--	--	12.05	9.75	--	--
MW203R	13 - 23	24.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- General Notes:**
- ft = feet.
 - bgs = below ground surface.
 - ID = identification.
 - GW = groundwater.
 - NAVD = North American Vertical Datum of 1988.
 - The top of the PVC riser was used as the measuring point for depth to groundwater.
 - "--" = Well not yet installed, abandoned, or not measured.
 - NM = Not measured.

Table 4. Groundwater Elevations
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Gauging Date:			11/19/15		4/27/16		11/21/16		4/14/17		11/8/17		1/31/18		4/2/18		11/15/18	
Monitoring Well ID	Well Screen Interval (ft bgs)	Elevation of Measuring Point (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)
MW-1	unknown	25.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	unknown	25.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	unknown	25.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-101	9 - 19	26.75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-102	6 - 16	18.89	--	--	8.02	10.87	--	--	--	--	--	--	7.94	10.95	7.58	11.31	--	--
MW-103	6 - 16	19.47	--	--	11.49	7.98	--	--	--	--	--	--	11.12	8.35	10.81	8.66	--	--
MW-104	5 - 15	17.67	--	--	10.63	7.04	--	--	9.05	8.62	--	--	11.99	5.68	9.21	8.46	--	--
MW-104R	5 - 15	15.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-105	19 - 29	38.84	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-106	9 - 19	26.33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-107	2 - 12	14.63	--	--	4.49	10.14	--	--	4.51	10.12	--	--	4.56	10.07	4.51	10.12	--	--
MW-108	2 - 12	12.74	--	--	4.11	8.63	--	--	3.78	8.96	--	--	4.02	8.72	4.05	8.69	--	--
MW-109	3 - 13	24.12	--	--	11.25	12.87	--	--	9.86	14.26	--	--	11.02	13.10	10.51	13.61	--	--
MW-110	3 - 13	15.58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-111	4 - 14	18.95	--	--	11.50	7.45	--	--	Dry	Dry	--	--	Dry	Dry	NF	NF	--	--
MW-111R	5 - 15	18.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-112	3 - 10	18.16	--	--	--	--	--	--	6.44	11.72	--	--	--	--	--	--	--	--
MW-112a	4 - 19	17.78	--	--	11.14	6.64	13.12	4.66	12.88	4.90	15.32	2.46	12.85	4.93	--	--	13.09	4.69
MW-113	10 - 20	26.16	--	--	11.65	14.51	--	--	10.83	15.33	--	--	13.90	12.26	11.35	14.81	--	--
MW-114	7 - 17	29.43	--	--	12.45	16.98	--	--	10.70	18.73	--	--	12.89	16.54	11.29	18.14	--	--
MW-115	10 - 25	27.15	--	--	18.23	8.92	--	--	17.33	8.82	--	--	18.17	8.98	17.66	9.49	--	--
MW-116	5 - 15	13.45	--	--	9.34	4.11	--	--	9.18	4.27	--	--	9.22	4.23	9.14	4.31	--	--
MW-117S	5 - 20	21.94	--	--	14.09	7.85	--	--	12.49	9.45	--	--	16.65	5.29	13.07	8.87	--	--
MW-117T	35 - 45	21.87	--	--	15.59	6.28	--	--	14.36	7.51	--	--	17.76	4.11	14.75	7.12	--	--
MW-117D	60 - 70	21.78	--	--	--	--	--	--	12.93	8.85	--	--	12.11	9.67	13.5	8.28	--	--
MW-118S	3 - 14	15.52	--	--	9.30	6.22	--	--	8.37	7.15	--	--	12.17	3.35	8.75	6.77	--	--
MW-118T	39.5 - 49.5	15.30	--	--	10.37	4.93	--	--	9.80	5.5	--	--	12.45	2.85	9.96	5.34	--	--
MW-118D	70 - 80	15.15	11.99	3.16	10.20	4.95	10.42	4.73	9.61	5.54	10.27	4.88	--	--	9.74	5.41	9.23	5.92
MW-119S	5 - 20	11.74	--	--	4.64	7.10	--	--	4.43	7.31	--	--	--	--	4.56	7.18	--	--
MW-119T	42 - 47	11.67	--	--	6.43	5.24	--	--	5.95	5.72	--	--	--	--	6.12	5.55	--	--
MW-120S	5 - 20	12.54	--	--	3.16	9.38	--	--	3.91	8.63	--	--	5.72	6.82	3.97	8.57	--	--
MW-120D	28 - 38	12.45	--	--	3.68	8.77	--	--	3.19	9.26	--	--	6.30	6.15	3.41	9.04	--	--
MW-121S	5 - 20	12.44	--	--	--	--	--	--	7.73	4.71	--	--	7.76	4.68	7.32	5.12	--	--
MW-121D	32 - 47	12.81	8.83	3.98	--	--	7.85	4.96	7.17	5.64	7.75	5.06	7.50	5.31	7.74	5.07	6.79	6.02
MW-122	4 - 16	16.42	13.23	3.19	13.19	3.23	13.21	3.21	13.18	3.24	13.17	3.25	13.19	3.23	13.13	3.29	13.17	3.25
GEO-1	5 - 20	25.88	--	--	11.39	14.49	--	--	10.75	15.13	--	--	--	--	11.11	14.77	--	--
GEO-2	5 - 20	26.54	--	--	12.18	14.36	--	--	11.51	15.03	--	--	--	--	11.83	14.71	--	--
GEO-3	5 - 20	25.64	--	--	--	--	--	--	10.25	15.39	--	--	11.40	14.24	10.79	14.85	--	--
GEO-4	4 - 19	21.69	--	--	11.61	10.08	--	--	10.59	11.1	--	--	11.20	10.49	11.20	10.49	--	--
GEO-5	5 - 20	20.14	--	--	10.94	9.20	--	--	9.81	10.33	--	--	10.44	9.70	10.2	9.94	--	--
GEO-6	5 - 20	17.62	--	--	9.72	7.90	--	--	8.42	9.2	--	--	9.12	8.50	8.67	8.95	--	--
SH-1	9 - 14	29.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-2	7 - 14	29.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-3	8 - 13	29.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-4	11 - 16	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-5	8 - 13	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW1	10 - 30	24.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW2	10 - 25	24.27	--	--	--	--	--	--	--	--	--	--	--	--	12.84	11.43	--	--
SH-MW2R	10 - 23	24.56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW3	10 - 24	22.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW201	11 - 21	27.51	--	--	13.15	14.36	--	--	--	--	--	--	15.36	12.15	13.34	14.17	--	--
MW202	10.5 - 20.5	27.82	--	--	13.53	14.29	--	--	--	--	--	--	15.77	12.05	12.86	14.96	--	--
MW203	6 - 18	21.80	--	--	13.93	7.87	--	--	--	--	--	--	15.76	6.04	12.98	8.82	--	--
MW203R	13 - 23	24.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- General Notes:**
- ft = feet.
 - bgs = below ground surface.
 - ID = identification.
 - GW = groundwater.
 - NAVD = North American Vertical Datum of 1988.
 - The top of the PVC riser was used as the measuring point for depth to groundwater.
 - "--" = Well not yet installed, abandoned, or not measured.
 - NM = Not measured.

Table 4. Groundwater Elevations
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Gauging Date:			4/15/19		11/22/19		4/13/20		11/18/20		4/12/21		11/30/21		4/12/22		11/29/22	
Monitoring Well ID	Well Screen Interval (ft bgs)	Elevation of Measuring Point (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)
MW-1	unknown	25.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	unknown	25.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	unknown	25.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-101	9 - 19	26.75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-102	6 - 16	18.89	7.21	11.68	--	--	7.37	11.52	--	--	8.13	10.76	--	--	--	--	--	--
MW-103	6 - 16	19.47	7.26	12.21	--	--	10.70	8.77	--	--	11.90	7.57	--	--	--	--	--	--
MW-104	5 - 15	17.67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-104R	5 - 15	15.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-105	19 - 29	38.84	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-106	9 - 19	26.33	--	--	--	--	--	--	--	--	NM- Flooded	--	--	--	--	--	--	--
MW-107	2 - 12	14.63	4.74	9.89	--	--	4.42	10.21	--	--		4.48	10.15	--	--	--	--	--
MW-108	2 - 12	12.74	3.95	8.79	--	--	3.86	8.88	--	--		4.05	8.69	--	--	--	--	--
MW-109	3 - 13	24.12	10.62	13.5	--	--	10.41	13.71	--	--	11.31	12.81	--	--	--	--	--	--
MW-110	3 - 13	15.58	--	--	--	--	--	--	--	--	1.99	13.59	--	--	--	--	--	--
MW-111	4 - 14	18.95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-111R	5 - 15	18.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-112	3 - 10	18.16	5.05	13.11	--	--	6.75	11.41	--	--	8.06	10.1	--	--	--	--	--	--
MW-112a	4 - 19	17.78	12.3	5.48	13.00	4.78	12.75	5.03	13.08	4.70	13.05	4.73	12.80	4.98	12.55	5.23	12.81	4.97
MW-113	10 - 20	26.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-114	7 - 17	29.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-115	10 - 25	27.15	16.96	10.19	--	--	17.89	9.26	--	--	19.4	7.75	--	--	--	--	--	--
MW-116	5 - 15	13.45	8.35	5.1	--	--	9.17	4.28	--	--	9.51	3.94	--	--	9	4.45	--	--
MW-117S	5 - 20	21.94	9.19	12.75	--	--	12.69	9.25	--	--	13.51	8.43	--	--	12.8	9.14	--	--
MW-117T	35 - 45	21.87	14.46	7.41	--	--	16.06	5.81	--	--	16.35	5.52	--	--	16	5.87	--	--
MW-117D	60 - 70	21.78	11.76	10.02	--	--	10.11	11.67	--	--	16.31	5.47	--	--	15.6	6.18	--	--
MW-118S	3 - 14	15.52	9.84	5.68	--	--	8.85	6.67	--	--	8.95	6.57	--	--	9.1	6.42	--	--
MW-118T	39.5 - 49.5	15.30	9.52	5.78	--	--	10.24	5.06	--	--	10.77	4.53	--	--	10.6	4.7	--	--
MW-118D	70 - 80	15.15	9.31	5.84	10.49	4.66	10.09	5.06	10.65	4.5	10.59	4.56	10.55	4.6	10.2	4.95	10.97	4.18
MW-119S	5 - 20	11.74	4.05	7.69	--	--	3.49	8.25	--	--	4.20	7.54	--	--	4.05	7.69	--	--
MW-119T	42 - 47	11.67	5.86	5.81	--	--	6.20	5.47	--	--	6.85	4.82	--	--	6.7	4.97	--	--
MW-120S	5 - 20	12.54	3.85	8.69	--	--	3.35	9.19	--	--	4.30	8.24	--	--	5	7.54	--	--
MW-120D	28 - 38	12.45	3.21	9.24	--	--	3.93	8.52	--	--	3.81	8.64	--	--	4.5	7.95	--	--
MW-121S	5 - 20	12.44	6.8	5.64	--	--	7.72	4.72	--	--	7.73	4.71	--	--	8	4.44	--	--
MW-121D	32 - 47	12.81	6.94	5.87	7.66	5.15	7.40	5.41	8	4.81	8.05	4.76	8.15	4.66	7.7	5.11	8.40	4.41
MW-122	4 - 16	16.42	12.81	3.61	13.15	3.27	13.01	3.41	13.11	3.31	13.02	3.4	13.1	3.32	12.9	3.52	13.15	3.27
GEO-1	5 - 20	25.88	11.1	14.78	--	--	10.40	15.48	--	--	11.01	14.87	--	--	10.85	15.03	--	--
GEO-2	5 - 20	26.54	12.98	13.56	--	--	11.11	15.43	--	--	12.26	14.28	--	--	12.2	14.34	--	--
GEO-3	5 - 20	25.64	11.06	14.58	--	--	10.36	15.28	--	--	ND-Bott at 11.15	--	--	--	--	--	--	--
GEO-4	4 - 19	21.69	10.72	10.97	--	--	11.41	10.28	--	--		12.41	9.28	--	--	--	--	--
GEO-5	5 - 20	20.14	7.55	12.59	--	--	11.32	8.82	--	--		12.26	7.88	--	--	--	--	--
GEO-6	5 - 20	17.62	8.23	9.39	--	--	11.62	6	--	--	12.21	5.41	--	--	--	--	--	--
SH-1	9 - 14	29.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-2	7 - 14	29.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-3	8 - 13	29.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-4	11 - 16	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-5	8 - 13	29.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW1	10 - 30	24.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW2	10 - 25	24.27	12.55	11.72	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW2R	10 - 23	24.56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW3	10 - 24	22.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW201	11 - 21	27.51	12.92	14.59	--	--	12.00	15.51	--	--	12.69	14.82	--	--	--	--	--	--
MW202	10.5 - 20.5	27.82	13.3	14.52	--	--	12.31	15.51	--	--	12.99	14.83	--	--	12.9	14.92	--	--
MW203	6 - 18	21.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW203R	13 - 23	24.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- General Notes:**
- ft = feet.
 - bgs = below ground surface.
 - ID = identification.
 - GW = groundwater.
 - NAVD = North American Vertical Datum of 1988.
 - The top of the PVC riser was used as the measuring point for depth to groundwater.
 - "--" = Well not yet installed, abandoned, or not measured.
 - NM = Not measured.

Table 4. Groundwater Elevations
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Gauging Date:			4/17/23		11/7/23		4/1/24		9/20/24		11/14/24		12/13/24	
Monitoring Well ID	Well Screen Interval (ft bgs)	Elevation of Measuring Point (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)	Depth to GW (ft)	Elevation of GW (ft NAVD)
MW-1	unknown	25.90	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	unknown	25.38	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	unknown	25.31	--	--	--	--	--	--	--	--	--	--	--	--
MW-101	9 - 19	26.75	--	--	--	--	--	--	--	--	--	--	--	--
MW-102	6 - 16	18.89	8.18	10.71	--	--	6.91	11.98	--	--	--	--	--	--
MW-103	6 - 16	19.47	--	--	--	--	10.49	8.98	--	--	--	--	--	--
MW-104	5 - 15	17.67	--	--	--	--	--	--	--	--	--	--	--	--
MW-104R	5 - 15	15.82	--	--	--	--	15.8	0.02	14.95	0.87	15	0.82	--	--
MW-105	19 - 29	38.84	--	--	--	--	--	--	--	--	--	--	--	--
MW-106	9 - 19	26.33	--	--	--	--	10.45	15.88	--	--	--	--	--	--
MW-107	2 - 12	14.63	4.43	10.2	--	--	4.34	10.29	--	--	--	--	--	--
MW-108	2 - 12	12.74	4.34	8.4	--	--	3.52	9.22	--	--	--	--	--	--
MW-109	3 - 13	24.12	11.49	12.63	--	--	9.75	14.37	--	--	--	--	--	--
MW-110	3 - 13	15.58	2.5	13.08	--	--	0.81	14.77	--	--	--	--	--	--
MW-111	4 - 14	18.95	--	--	--	--	--	--	--	--	--	--	--	--
MW-111R	5 - 15	18.22	--	--	--	--	--	--	--	--	--	--	12.59	5.63
MW-112	3 - 10	18.16	--	--	--	--	--	--	--	--	--	--	--	--
MW-112a	4 - 19	17.78	12.67	5.11	12.64	5.14	12.64	5.14	--	--	13.16	4.62	--	--
MW-113	10 - 20	26.16	--	--	--	--	--	--	--	--	--	--	--	--
MW-114	7 - 17	29.43	--	--	--	--	--	--	--	--	--	--	--	--
MW-115	10 - 25	27.15	19.61	7.54	--	--	18.12	9.03	--	--	--	--	--	--
MW-116	5 - 15	13.45	9.03	4.42	--	--	--	--	--	--	--	--	--	--
MW-117S	5 - 20	21.94	11.19	10.75	--	--	11.62	10.32	--	--	--	--	--	--
MW-117T	35 - 45	21.87	16.1	5.77	--	--	15.09	6.78	--	--	--	--	--	--
MW-117D	60 - 70	21.78	16.07	5.71	--	--	11.61	10.17	--	--	--	--	--	--
MW-118S	3 - 14	15.52	9.17	6.35	--	--	8.01	7.51	--	--	--	--	--	--
MW-118T	39.5 - 49.5	15.30	10.6	4.7	--	--	9.91	5.39	--	--	--	--	--	--
MW-118D	70 - 80	15.15	10.5	4.65	10.62	4.53	9.75	5.4	--	--	11.19	3.96	--	--
MW-119S	5 - 20	11.74	5.1	6.64	--	--	4.07	7.67	--	--	--	--	--	--
MW-119T	42 - 47	11.67	6.73	4.94	--	--	5.98	5.69	--	--	--	--	--	--
MW-120S	5 - 20	12.54	4.31	8.23	--	--	3.42	9.12	--	--	--	--	--	--
MW-120D	28 - 38	12.45	3.81	8.64	--	--	3.06	9.39	--	--	--	--	--	--
MW-121S	5 - 20	12.44	7.58	4.86	--	--	4.07	8.37	--	--	--	--	--	--
MW-121D	32 - 47	12.81	8.05	4.76	NM	NM	7.17	5.64	--	--	8.70	4.11	--	--
MW-122	4 - 16	16.42	13.1	3.32	13.12	3.3	13.02	3.4	--	--	13.18	3.24	--	--
GEO-1	5 - 20	25.88	11.16	14.72	--	--	9.91	15.97	--	--	--	--	--	--
GEO-2	5 - 20	26.54	12.1	14.44	--	--	10.6	15.94	--	--	--	--	--	--
GEO-3	5 - 20	25.64	--	--	--	--	--	--	--	--	--	--	--	--
GEO-4	4 - 19	21.69	12.83	8.86	--	--	10.71	10.98	--	--	--	--	--	--
GEO-5	5 - 20	20.14	12.79	7.35	--	--	10.44	9.7	--	--	--	--	--	--
GEO-6	5 - 20	17.62	12.75	4.87	--	--	10.75	6.87	--	--	--	--	--	--
SH-1	9 - 14	29.55	--	--	--	--	--	--	--	--	--	--	--	--
SH-2	7 - 14	29.64	--	--	--	--	--	--	--	--	--	--	--	--
SH-3	8 - 13	29.66	--	--	--	--	--	--	--	--	--	--	--	--
SH-4	11 - 16	29.63	--	--	--	--	--	--	--	--	--	--	--	--
SH-5	8 - 13	29.63	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW1	10 - 30	24.02	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW2	10 - 25	24.27	--	--	--	--	--	--	--	--	--	--	--	--
SH-MW2R	10 - 23	24.56	--	--	--	--	13.54	11.02	--	--	--	--	--	--
SH-MW3	10 - 24	22.31	--	--	--	--	--	--	--	--	--	--	--	--
MW201	11 - 21	27.51	13.84	13.67	--	--	11.62	15.89	--	--	--	--	--	--
MW202	10.5 - 20.5	27.82	13.2	14.62	--	--	12.11	15.71	--	--	--	--	--	--
MW203	6 - 18	21.80	--	--	--	--	--	--	--	--	--	--	--	--
MW203R	13 - 23	24.97	--	--	--	--	19.15	5.82	--	--	--	--	--	--

- General Notes:**
- ft = feet.
 - bgs = below ground surface.
 - ID = identification.
 - GW = groundwater.
 - NAVD = North American Vertical Datum of 1988.
 - The top of the PVC riser was used as the measuring point for depth to groundwater.
 - "--" = Well not yet installed, abandoned, or not measured.
 - NM = Not measured.

Table 5. Chemical Testing Results - GEI Subsurface Soil
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Location Name: Sample Name: Sample Depth (ft): Sample Date:			MW103			MW111				MW122		
			MW103S1	MW103S2	MW103S6	B111 (13-15') 13 to 15 1/8/07	B111 (7-9') 7 to 9 1/8/07	B111-VAC- COMP 2 to 4 1/4/07	B111-VAC- GRAB 3 1/4/07	B122-S1 6 to 8 1/23/08	B122-S3 10 to 12 1/24/08	B122-S6 16 to 18 1/24/08
Analyte	Method	Units										
Volatile Organic Compounds (VOCs)												
Benzene	8260	mg/kg	< 0.03	< 0.023	< 0.021	< 0.019	< 0.026	NT	< 0.022	< 0.027	< 0.027	< 0.027
Butanone,2- (MEK)			< 0.3	< 0.23	< 0.21	< 0.19	< 0.26	NT	< 0.22	< 0.27	< 0.27	< 0.27
Butylbenzene,sec-			< 0.3	< 0.23	< 0.21	< 0.19	< 0.26	NT	< 0.22	< 0.27	< 0.27	< 0.27
Dichloroethane,1,1-			< 0.12	< 0.091	< 0.082	< 0.075	< 0.1	NT	< 0.087	< 0.11	< 0.11	< 0.11
Dichloroethylene, cis-1,2-			< 0.12	< 0.091	< 0.082	< 0.075	< 0.1	NT	< 0.087	< 0.11	< 0.11	0.0475 J
Ethylbenzene			< 0.12	< 0.091	< 0.082	< 0.075	< 0.1	NT	< 0.087	< 0.11	< 0.11	< 0.11
Isopropyltoluene,4-			< 0.3	< 0.23	< 0.21	< 0.19	< 0.26	NT	< 0.22	< 0.27	< 0.27	< 0.27
Methyl tert-butyl ether			< 0.12	< 0.091	< 0.082	< 0.075	< 0.1	NT	< 0.087	< 0.11	< 0.11	< 0.11
Methyl-2-pentanone,4- (MIBK)			< 0.3	< 0.23	< 0.21	< 0.19	< 0.26	NT	< 0.22	< 0.27	< 0.27	< 0.27
Methylene chloride			< 0.12	< 0.091	< 0.082	0.0176 J	< 0.1	NT	< 0.087	< 0.11	< 0.11	< 0.11
Naphthalene			< 0.3	< 0.23	< 0.21	< 0.19	< 0.26	NT	< 0.22	< 0.27	< 0.27	< 0.27
Propylbenzene, n-			< 0.3	< 0.23	< 0.21	< 0.19	< 0.26	NT	< 0.22	< 0.27	< 0.27	< 0.27
Tetrachloroethylene (PCE)			< 0.12	< 0.091	0.722	3.15	< 0.1	NT	< 0.087	0.0257 J	< 0.11	1.31
Toluene			< 0.3	< 0.23	< 0.21	< 0.19	< 0.26	NT	< 0.22	< 0.27	< 0.27	< 0.27
Trichloroethane,1,1,1- (TCA)			< 0.12	< 0.091	< 0.082	< 0.075	< 0.1	NT	< 0.087	< 0.11	< 0.11	< 0.11
Trichloroethylene (TCE)			< 0.12	< 0.091	< 0.082	0.0469 J	< 0.1	NT	< 0.087	< 0.11	< 0.11	0.0925 J
Trimethylbenzene, 1,3,5-			< 0.3	< 0.23	< 0.21	< 0.19	< 0.26	NT	< 0.22	< 0.27	< 0.27	< 0.27
Xylene, m,p-			< 0.12	< 0.091	< 0.082	< 0.075	< 0.1	NT	< 0.087	< 0.11	< 0.11	< 0.11
Xylene, o-			< 0.12	< 0.091	< 0.082	< 0.075	< 0.1	NT	< 0.087	< 0.11	< 0.11	< 0.11
Total Xylenes			< 0.12	< 0.091	< 0.082	< 0.075	< 0.1	NT	< 0.087	< 0.11	< 0.11	< 0.11
Volatile Petroleum Hydrocarbons (VPH)												
C5-C8 Aliphatics	MAVPH	mg/kg	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Extractable Petroleum Hydrocarbons (EPH)												
C11-C22 Aromatics	MAEPH	mg/kg	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Other												
Solids, Percent	1603M	%	85.9	92.2	87.4	90.3	80.1	89.4	89.4	NT	NT	NT
Specific Conductivity	E120.1	µmhos/cm	NT	NT	NT	226	146	107	NT	NT	NT	NT
Total Organic Carbon	9060	mg/kg	NT	NT	NT	< 1100	< 1200	< 1000	NT	NT	NT	NT
pH	9045	s.u.	NT	NT	NT	6.8	6.8	8.1	NT	NT	NT	NT

General Notes:

- Generally, only analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
- "<" = The analyte was not detected at a concentration above the specified reporting limit.
- mg/kg = milligrams per kilogram.
- µmhos/cm = micro-ohms per centimeter.
- s.u. = standard units.
- ND = The analyte was not detected above the laboratory reporting limit. See the laboratory data sheets for the laboratory reporting limit.
- NT = Not Tested.

Qualifying Notes:

- B The reported result is attributed to sampling or laboratory contamination.
F+ The result has a high bias due to matrix spike recovery above upper control limits.
J The reported result is below the laboratory reporting limit and is estimated.

Table 6. Chemical Testing Results - Sub-Slab Soil Gas
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

				103 Washington Street									
				103Wash-SV1									
				5/10/2023		7/6/2023		3/5/2024		12/4/2024		2/11/2025	
				µg/m ³	ppbv	µg/m ³	ppbv	µg/m ³	ppbv	µg/m ³	ppbv	µg/m ³	ppbv
Analyte	Method	Residential Sub-Slab Soil Gas Screening Values (µg/m ³)	Commercial Sub-Slab Soil Gas Screening Values (µg/m ³)										
Volatile Organic Compounds (VOCs)	TO-15												
1,1-Dichloroethane		56	50000	<0.081	<0.020	<0.081	<0.020	<0.081	<0.020	<0.081	<0.020	<0.081	<0.020
1,1-Dichloroethylene		56	12000	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020
cis-1,2-Dichloroethylene		56	370	1.95	0.493	2.32	0.585	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020
trans-1,2-Dichloroethylene		56	3700	1.17	0.295	2.39	0.603	<0.079	<0.020	<0.079	<0.020	0.194	0.049
Tetrachloroethylene (PCE)		98	290	28.5	4.21	51.5	7.60	0.210	0.031	2.87	0.423	1.36	0.201
1,1,1-Trichloroethane		210	310000	<0.109	<0.020	0.115	0.021	<0.109	<0.020	0.115	0.021	<0.109	<0.020
Trichloroethylene (TCE)		28	120	9.46	1.76	15.7	2.92	<0.107	<0.020	0.333	0.062	0.193	0.036

General Notes:

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m³ = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. Residential Sub-Slab Soil Gas Screening Values taken from the Massachusetts Department of Environmental Protection (MassDEP) "Vapor Intrusion Guidance: Site Assessment, Mitigation and Closure" dated October 2016.
Commercial Sub-Slab Soil Gas Screening Values taken from the Massachusetts Department of Environmental Protection (MassDEP) "Vapor Intrusion Guidance: Site Assessment, Mitigation and Closure" dated October 2016.
6. Closure" dated October 2016.

Table 6. Chemical Testing Results - Sub-Slab Soil Gas
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

				103 Washington Street									
				103Wash-SV2									
				5/10/2023		7/6/2023		3/5/2024		12/4/2024		2/11/2025	
				µg/m ³	ppbv	µg/m ³	ppbv	µg/m ³	ppbv	µg/m ³	ppbv	µg/m ³	ppbv
Analyte	Method	Residential Sub-Slab Soil Gas Screening Values (µg/m ³)	Commercial Sub-Slab Soil Gas Screening Values (µg/m ³)										
Volatile Organic Compounds (VOCs)	TO-15												
1,1-Dichloroethane		56	50000	<0.081	<0.020	<0.081	<0.020	<0.081	<0.020	0.125	0.031	<0.081	<0.020
1,1-Dichloroethylene		56	12000	<0.079	<0.020	0.107	0.027	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020
cis-1,2-Dichloroethylene		56	370	9.48	2.39	19.2	4.83	12.2	3.07	6.94	1.75	13.9	3.50
trans-1,2-Dichloroethylene		56	3700	6.66	1.68	7.41	1.87	2.24	0.565	1.38	0.347	1.94	0.489
Tetrachloroethylene (PCE)		98	290	189	27.9	188	27.7	40.9	6.0	60.7	8.95	33.8	4.98
1,1,1-Trichloroethane		210	310000	0.175	0.032	0.278	0.051	<0.109	<0.020	0.218	0.040	<0.109	<0.020
Trichloroethylene (TCE)		28	120	98.3	18.3	130	24.1	37.6	7.00	28.9	5.37	26.8	4.98

General Notes:

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m³ = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. Residential Sub-Slab Soil Gas Screening Values taken from the Massachusetts Department of Environmental Protection (MassDEP) "Vapor Intrusion Guidance: Site Assessment, Mitigation and Closure" dated October 2016.
Commercial Sub-Slab Soil Gas Screening Values taken from the Massachusetts Department of Environmental Protection (MassDEP) "Vapor Intrusion Guidance: Site Assessment, Mitigation and Closure" dated October 2016.
6. Closure" dated October 2016.

Table 7. Chemical Testing Results - Indoor Air

Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Sample Location: Sample Name: Sample Date: Units:				First Floor									
				103Wash-F1 5/10/23		103Wash-F1 7/6/23		103Wash-F1 3/5/24		103Wash-F1 12/4/24		103Wash-F1 2/21/25	
				µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv
Analyte	Method	MassDEP Residential Indoor Air Threshold Values (µg/m ³)	MassDEP Commerical Indoor Air Threshold Values (µg/m ³)										
Volatile Organic Compounds (VOCs)	TO-15												
cis-1,2,-Dichloroethylene		0.8	5.3	<0.079	<0.020	0.107	0.027	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020
trans-1,2-Dichloroethylene		0.8	53	0.194	0.049	0.852	0.215	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020
Tetrachloroethylene (PCE)		1.4	4.1	0.278	0.041	0.692	0.102	<0.136	<0.020	0.251	0.037	<0.136	<0.020
Trichloroethylene (TCE)		0.4	1.8	<0.107	<0.020	0.204	0.038	<0.107	<0.020	<0.107	<0.020	<0.107	<0.020

General Notes:

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m³ = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. A sample was not collected from the basement in May 2023 due to fresh air introduction during construction activities.
6. Residential Threshold Values taken from the Massachusetts Department of Environmental Protection (MassDEP) "Vapor Intrusion Guidance: Site Assessment, Mitigation and Closure" dated October 2016.
7. Commerical Threshold Values taken from the Massachusetts Department of Environmental Protection (MassDEP) "Vapor Intrusion Guidance: Site Assessment, Mitigation and Closure" dated October 2016.

Table 7. Chemical Testing Results - Indoor Air

Partial Permanent Solution Statement

103 Washington Street
Somerville, Massachusetts

Sample Location: Sample Name: Sample Date: Units:				Basement								Second Floor							
				103Wash-B1 7/6/23		103Wash-B1 3/5/24		103Wash-B1 12/4/24		103Wash-B1 2/11/25		103Wash-UNIT1 12/4/24		103Wash-UNIT1 2/11/25		103Wash-UNIT3 12/4/24		103Wash-F2 2/11/25	
				µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv
Analyte	Method	MassDEP Residential Indoor Air Threshold Values (µg/m ³)	MassDEP Commerical Indoor Air Threshold Values (µg/m ³)																
Volatile Organic Compounds (VOCs)	TO-15																		
cis-1,2-Dichloroethylene		0.8	5.3	0.599	0.151	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020
trans-1,2-Dichloroethylene		0.8	53	6.50	1.64	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020	<0.079	<0.020
Tetrachloroethylene (PCE)		1.4	4.1	2.28	0.336	0.325	0.048	0.888	0.131	0.542	0.080	0.176	0.026	0.170	0.025	0.264	0.039	0.312	0.046
Trichloroethylene (TCE)		0.4	1.8	0.919	0.171	<0.107	<0.020	<0.107	<0.020	<0.107	<0.020	<0.107	<0.020	<0.107	<0.020	<0.107	<0.020	<0.107	<0.020

General Notes:

1. Analytes detected in at least one sample are reported here. For a complete list of analytes see the attached laboratory data sheets.
2. µg/m³ = micrograms per cubic meter.
3. ppbv = parts per billion by volume.
4. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
5. A sample was not collected from the basement in May 2023 due to fresh air introduction during construction activities.
6. Residential Threshold Values taken from the Massachusetts Department of Environmental Protection (MassDEP) "Vapor Intrusion Guidance: Site Assessment, Mitigation and Closure" dated October 2016.
7. Commerical Threshold Values taken from the Massachusetts Department of Environmental Protection (MassDEP) "Vapor Intrusion Guidance: Site Assessment, Mitigation and Closure" dated October 2016.

Table 8. Chemical Testing Results - Sump Water
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Location Name: Sample Name: Sample Date:			103 Washington Street 103Wash-Sump 5/22/2023
Analyte	Method	Units	
Volatile Organic Compounds (VOCs)	8260	ug/L	
cis-1,2-Dichloroethylene			1.4
Tetrachloroethylene (PCE)			<1.0
Trichloroethylene (TCE)			1.5
Total VOCs			2.9

General Notes

1. µg/l = micrograms per liter.
2. "< " = The analyte was not detected at a concentration above the specified reporting limit.
3. ND= Not Detected

**Table 9. Summary Statistics for Soil
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts**

Analyte	Number of Detections	Number of Samples	Detection Frequency (%)	Maximum Detected Concentration (mg/kg)	MassDEP Background Level in Natural Soil (mg/kg)	Contaminant of Concern (Y/N)	EPC 0-15' (mg/kg)	M3CL
VOCs								
Naphthalene ^(a)	1	10	10%	0.44	0.5	N	-	10,000
M,p-Xylenes	1	10	10%	0.71	NS	Y	0.7	10,000
cis-1,2-Dichloroethene	1	1	100%	0.012	NS	Y	0.0	5,000
Tetrachloroethene	1	1	100%	0.19	NS	Y	0.2	8,000
Trichloroethene	1	1	100%	0.09	NS	Y	0.1	700
VPH								
C9-10 Aromatics	1	9	11%	26	NS	Y	26	5,000
C5-C8 Aliphatics	1	9	11%	41	NS	Y	41	5,000
C9-C12 Aliphatics	1	9	11%	63	NS	Y	63	20,000
EPH								
C19-C36 Aliphatics	1	1	100%	72	NS	Y	72	20,000
C11-C22 Aromatics	1	1	100%	49	NS	Y	49	10,000

General Notes:

1. Only results for detected compounds are reported here. For a complete list of analytes see the laboratory data sheets.
2. mg/kg = milligrams per kilogram.
3. EPC = Exposure Point Concentration.
4. M3CL = Method 3 Ceiling Limit.

Footnotes

- ^(a) The maximum detected concentration of naphthalene is below the natural background standard, therefore, it is not considered a COC in soil.

Table 10. Summary Statistics for Groundwater
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

	Number of Detections	Number of Samples	Detection Frequency (%)	Maximum Concentration Detected (µg/L)	Average Concentration (µg/L)	Contaminant of Concern (Y/N)	EPC (µg/L)	M3CL
VOCs								
Acetone	2	15	13%	47	21.8	Y	22	100,000
Benzene	1	17	6%	12	2.3	Y	2	100,000
2-Butanone (MEK)	1	15	7%	8.5	18.4	Y	18.4	100,000
1,1-Dichloroethane	10	12	83%	48	23.0	Y	23	10,000
1,1-Dichloroethylene	3	12	25%	12	5.7	Y	6	100,000
cis-1,2-Dichloroethylene	12	15	80%	180	85.2	Y	85	100,000
Ethylbenzene	1	17	6%	63	6.8	Y	7	100,000
Methyl tert-butyl ether	3	17	18%	9.8	7.0	Y	7.0	100,000
Naphthalene	1	17	6%	69	10.2	Y	10	100,000
Tetrachloroethylene (PCE)	14	15	93%	1700	867.4	Y	867	100,000
Toluene	1	17	6%	4.3	3.3	Y	3.3	100,000
Trichloroethylene (TCE)	13	15	87%	220	109.8	Y	110	50,000
Vinyl chloride	1	12	8%	1.6	4.3	Y	4.3	100,000
Total Xylene	1	17	6%	58.8	9.5	Y	9.5	100,000
VPH								
C5-C8 Aliphatics	1	3	33%	920	340	Y	340	100,000
C9-C10 Aromatics	1	3	33%	840	313.3	Y	313	100,000
C9-C12 Aliphatics	1	3	33%	1300	466.7	Y	467	100,000
PAHs								
2-Methylnaphthalene	1	2	50%	14	7	Y	7	100,000
Benz(a)anthracene	1	2	50%	0.09	0.1	Y	0.05	10,000
Benzo(a)pyrene	1	2	50%	0.09	0.1	Y	0.05	5,000
Benzo(b)fluoranthene	1	2	50%	0.17	0.1	Y	0.09	4,000
Benzo(g,h,i)perylene	1	2	50%	0.16	0.1	Y	0.105	500
Benzo(k)fluoranthene	1	2	50%	0.12	0.1	Y	0.065	1,000
Chrysene	1	2	50%	0.18	0.1	Y	0.095	700
Dibenz(a,h)anthracene	1	2	50%	0.05	0.028	Y	0.0275	10,000
Fluoranthene	1	2	50%	0.15	0.1	Y	0.1	2,000
Indeno(1,2,3-cd)pyrene	1	2	50%	0.13	0.1	Y	0.07	1,000
Phenanthrene	1	2	50%	0.17	0.1	Y	0.1025	100,000
Pyrene	1	2	50%	0.23	0.1	Y	0.14	700
Metals Dissolved								
Barium	1	1	100%	840	840	Y	840	100,000
Selenium	1	1	100%	13	13	Y	13	500

General Notes:

1. Only results for detected compounds are reported here. For a complete list of analytes see the laboratory data sheets.
2. µg/L = micrograms per liter.
3. EPC = Exposure Point Concentration.
4. M3CL = Method 3 Ceiling Limit.

Table 11. Sub-Slab Soil Vapor Data Summary Statistics
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

			103 Washington Street (Residential) Sub-Slab Soil Vapor Data Collected Between May 2023 and February 2025					
Analyte	Residential Sub-Slab Screening Levels ($\mu\text{g}/\text{m}^3$)	Commercial Sub-Slab Screening Levels ($\mu\text{g}/\text{m}^3$)	Detects	Sample Number	Detection Frequency	Contaminant of Concern (Y/N)	Average Concentration	MDC
VOCs								
1,1-Dichloroethane	56	50000	1	10	10%	Y	0.05	0.125
1,1-Dichloroethylene	56	12000	1	10	10%	Y	0.05	0.107
cis-1,2-Dichloroethylene	56	370	7	10	70%	Y	6.61	19.2
trans-1,2-Dichloroethylene	56	3700	8	10	80%	Y	2.35	7.41
Tetrachloroethylene (PCE)	98	290	10	10	100%	Y	59.68	189
1,1,1-Trichloroethane	210	310000	5	10	50%	Y	0.12	0.278
Trichloroethylene (TCE)	28	120	9	10	90%	Y	34.7	130

General Notes:

1. All units in $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter.
2. Analytes detected above the laboratory reporting limit are reported here. For a complete list of analytes see the laboratory data sheets.
3. MDC = Maximum Detected Concentration
4. Sub-Slab Soil Vapor Screening Levels are cited from the Massachusetts Department of Environmental Protection Vapor Intrusion Guidance WSC#16-435, issued October 2016.
5. Results in bold exceed the applicable Residential Sub-Slab Soil Vapor Screening Levels.

Table 12. Indoor Air Data Summary Statistics
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Residential Indoor Air Data			103 Washington Street (Basement) Indoor Air Data Collected Between July 2023 and February 2025 ^(a)				103 Washington Street (1st Floor) Indoor Air Data Collected Between May 2023 and February 2025 ^(b)				
Analyte	Residential Threshold Values (µg/m ³)	Commercial Threshold Values (µg/m ³)	Detects	Sample Number	Detection Frequency	MDC	Detects	Sample Number	Detection Frequency	Contaminant of Concern (Y/N)	MDC
VOCs											
cis-1,2,-Dichloroethylene	0.8	5.3	1	4	25%	0.599	1	5	20%	Y	0.107
trans-1,2-Dichloroethylene	0.8	53	1	4	25%	6.5	2	5	40%	Y	0.852
Tetrachloroethylene (PCE)	1.4	4.1	4	4	100%	2.28	3	5	60%	Y	0.692
Trichloroethylene (TCE)	0.4	1.8	1	4	25%	0.919	1	5	20%	Y	0.204

General Notes:

1. All units in µg/m³ = micrograms per cubic meter.
2. Only analytes detected in at least one indoor air sample are presented.
3. MDC = Maximum Detected Concentration
4. Threshold Values are cited from the Massachusetts Department of Environmental Protection Vapor Intrusion Guidance WSC#16-435, issued October 2016.
5. Results in bold exceed the applicable Residential Threshold Values.

Footnotes:

- ^(a) The basement is not an occupied space.
- ^(b) The first floor is used for commercial purposes only.
- ^(c) The second floor is used for residential purposes.

Table 12. Indoor Air Data Summary Statistics
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Residential Indoor Air Data			103 Washington Street (2nd Floor) Indoor Air Data Collected Between December 2024 and February 2025 ^(c)				
Analyte	Residential Threshold Values (µg/m ³)	Commercial Threshold Values (µg/m ³)	Detects	Sample Number	Detection Frequency	Contaminant of Concern (Y/N)	MDC
VOCs							
cis-1,2,-Dichloroethylene	0.8	5.3	0	4	0%	N	---
trans-1,2-Dichloroethylene	0.8	53	0	4	0%	N	---
Tetrachloroethylene (PCE)	1.4	4.1	4	4	100%	Y	0.312
Trichloroethylene (TCE)	0.4	1.8	0	4	0%	N	---

General Notes:

1. All units in µg/m³ = micrograms per cubic meter.
2. Only analytes detected in at least one indoor air sample are presented.
3. MDC = Maximum Detected Concentration
4. Threshold Values are cited from the Massachusetts Department of Environmental Protection Vapor Intrusion Guidance WSC#16-435, issued October 2016.
5. Results in bold exceed the applicable Residential Threshold Values.

Footnotes:

- (a) The basement is not an occupied space.
- (b) The first floor is used for commercial purposes only.
- (c) The second floor is used for residential purposes.

Table 13. Indoor Air Exposure Point Concentration Summary
Partial Permanent Solution Statement
103 Washington Street
Somerville, Massachusetts

Chemical of Concern	MADEP Indoor Air Residential Threshold Values ($\mu\text{g}/\text{m}^3$)	MADEP Indoor Air Commercial Threshold Values ($\mu\text{g}/\text{m}^3$)	Current Indoor Air EPC ($\mu\text{g}/\text{m}^3$) ^(a)	Future Indoor Air EPC ($\mu\text{g}/\text{m}^3$) ^(b)
COCs				
1,1-Dichloroethane			---	0.00070
1,1-Dichloroethylene	0.8	180	-	0.00066
cis-1,2-Dichloroethylene	0.8	5.3	0.599	0.094
trans-1,2-Dichloroethylene	0.8	53	6.5	0.034
Tetrachloroethylene (PCE)	1.4	4.1	2.28	0.85
1,1,1-Trichloroethane	3	4400	-	0.0017
Trichloroethylene (TCE)	0.4	1.8	0.919	0.50

General Notes:

1. Analytes detected above the laboratory reporting limit are reported here. For a complete list of analytes see the laboratory data sheets.
2. $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter.
3. Threshold Values are cited from "Vapor Intrusion Guidance WSC#16-435" from the Massachusetts Department of Environmental Protection dated October 2016.
4. Bolded values exceed the Residential Threshold Values

Footnotes:

- ^(a) Current indoor air EPCs for 103 Washington Street are conservatively based on the maximum detected concentrations detected from the basement, first floor, or second floor. The maximum detected concentrations can be found on Table RC-4.
- ^(b) Future indoor air EPCs for 103 Washington Street based on average detected sub-slab soil vapor concentrations divided by default attenuation factor of 70. The average detected sub-slab soil vapor concentrations can be found in Table RC-3.

Figures

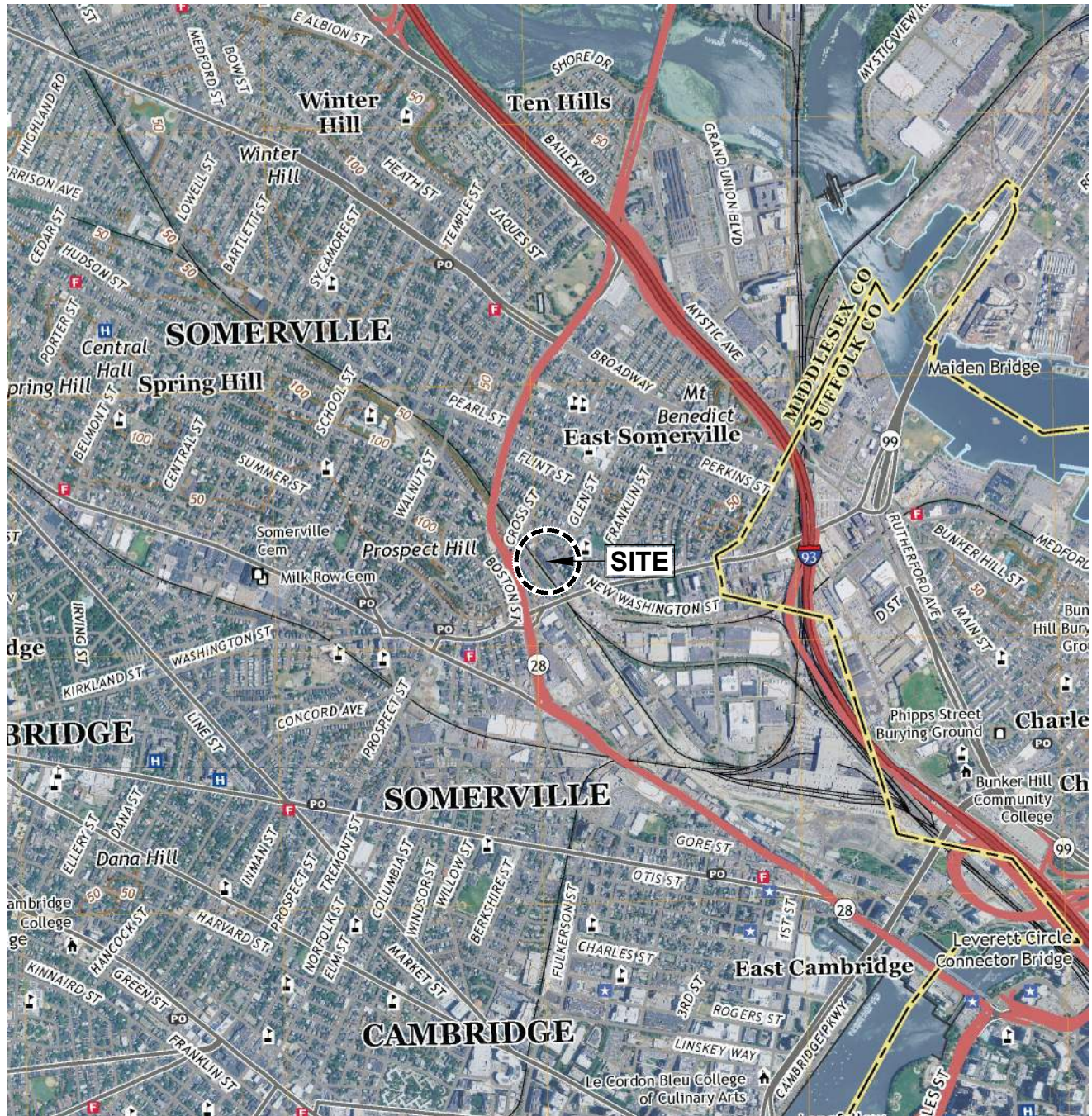
Figure 1 Site Location Map

Figure 2 103 Washington Street Portion of Disposal Site Subject to Partial Permanent Solution

Figure 3 MassGIS Map

Figure 4 Groundwater Elevation Contour Plan (April 2024)

Figure 5 103 Washington Street Indoor Ambient Air Samples and Soil Vapor Samples Locations



This Image is from U.S.G.S. Topographic 7.5 Minute Series
 Boston North, MA Quadrangle, 2018.
 Datum is North American Vertical Datum of 1988 (NAVD88).
 Contour Interval is 10 Feet.



Partial Permanent Solution Statement
 50 Tufts Street
 Somerville, Massachusetts

UniFirst Corporation
 Wilmington, Massachusetts



Project 045163

SITE LOCATION MAP

June 2025

Fig. 1

MassDEP - Bureau of Waste Site Cleanup

Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:

103 WASHINGTON STREET SOMERVILLE, MA

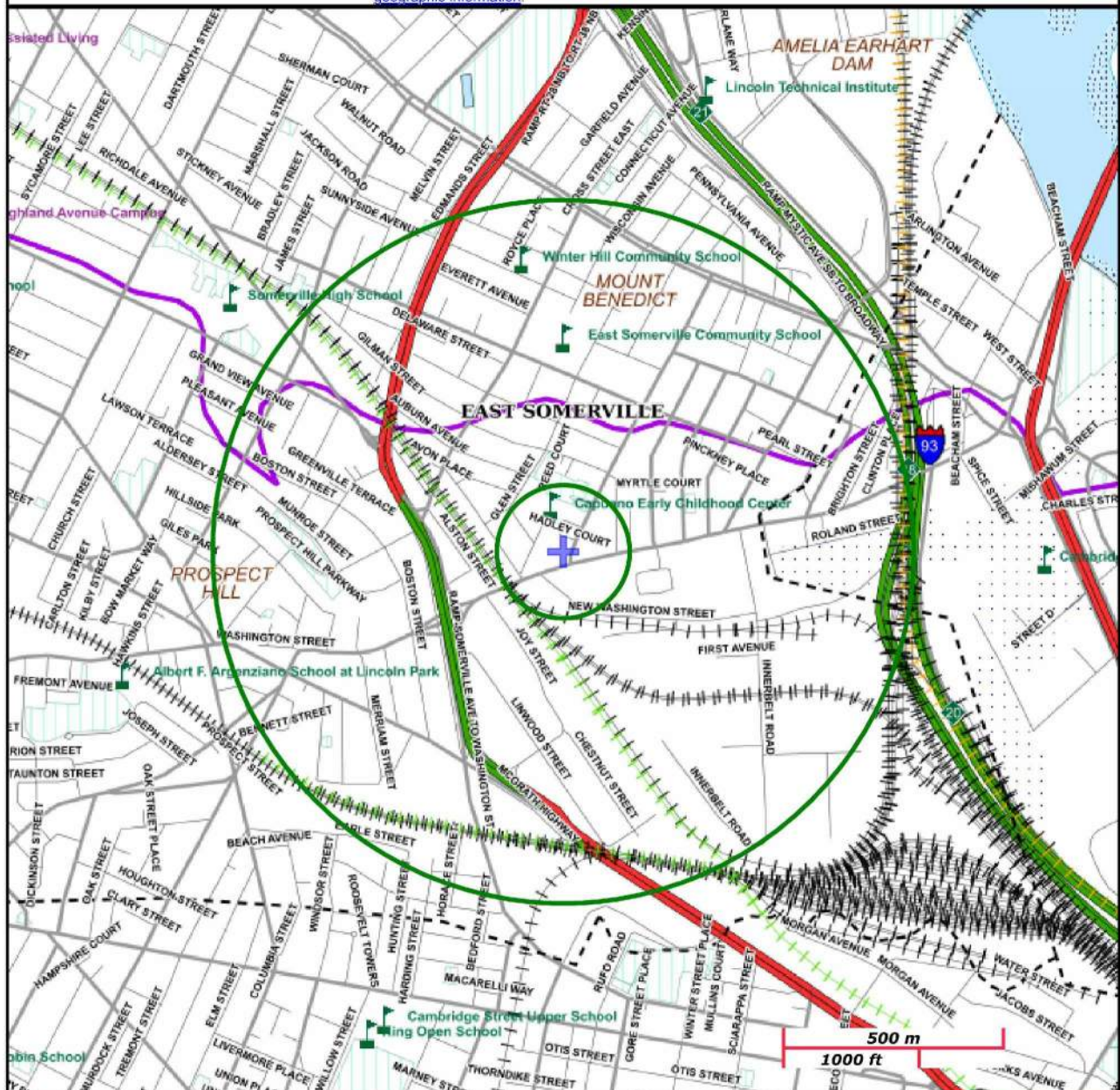
NAD83 UTM Meters:
4694251mN . 328239mE (Zone: 19)
May 13, 2025

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at:
<https://www.mass.gov/orgs/massgis-bureau-of-geographic-information>.



MassDEP

Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Aquifers: Medium Yield, High Yield, EPA Sole Source

Non Potential Drinking Water Source Area: Medium, High (Yield)

PWS Protection Areas: Zone II, WPA, Zone A

Hydrography: Open Water, PWS Reservoir, Tidal Flat

Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMA 100yr Floodplain; Protected Open Space; ACEC

NHESP Pri-Hab of Rare Species; Vernal Pool: Cert., Potential

Solid Waste Landfill; PWS: Com. GW, SW, Emerg., Non-Com.

Partial Permanent Solution Statement
50 Tufts Street
Somerville, Massachusetts

UniFirst Corporation
Wilmington, Massachusetts

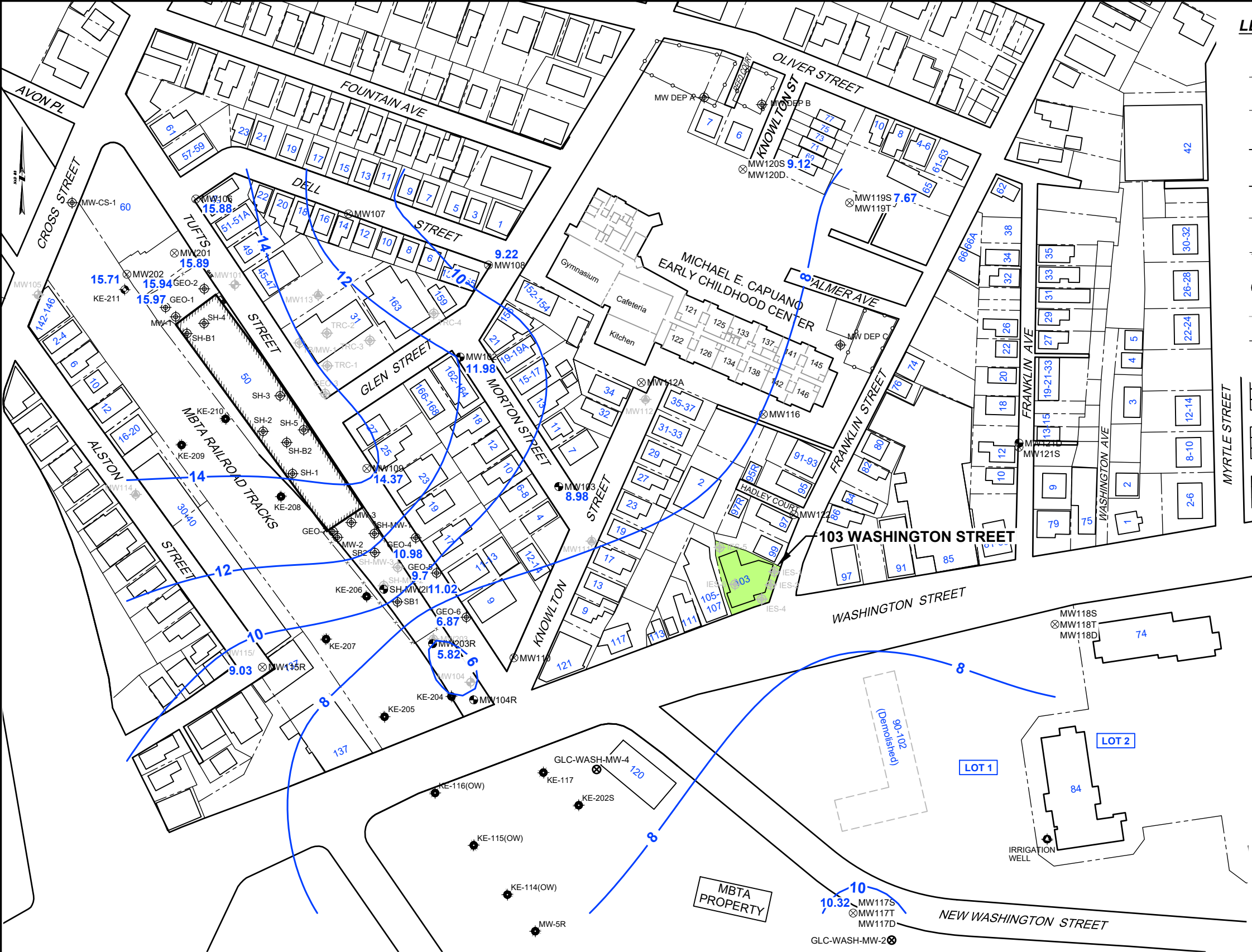


Project 045163

MASSGIS MAP

June 2025

Fig. 3

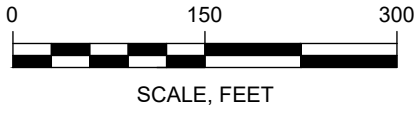


LEGEND:

- ⊕ MONITORING WELL INSTALLED BY TRC, 2014
- ⊙ BORING BY KLEINFELDER, MARCH 2014 AND APRIL 2014
- ⊙ MONITORING WELL BY KLEINFELDER, SEPTEMBER 2012, MARCH 2014, AND APRIL 2014
- ⊙ MONITORING WELL WITH SOIL VAPOR SAMPLE PORT INSTALLED BY GEI, JANUARY 2007 - JANUARY 2008
- ⊙ MONITORING WELL INSTALLED BY GEI, MAY 2006
- ⊙ MONITORING WELL INSTALLED BY OTHERS
- ⊙ PREVIOUSLY INSTALLED IRRIGATION WELL
- ⊙ GLXC WELL INSTALLED AUGUST 2020
- ⊙ WELLS IN GRAY HAVE BEEN DESTROYED OR DECOMMISSIONED
- x — CHAIN LINK FENCE
- 138 ROOM NUMBER AT CAPUANO SCHOOL
- BOUNDARY OF COMMUNITY GARDENS
- 84 STREET ADDRESS
- MBTA = MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
- 9.03 GROUNDWATER ELEVATION MEASURED 4/01/2024 (DATUM NAVD88)
- 8 GROUNDWATER ELEVATION CONTOUR, FEET

GENERAL NOTES:

1. MONITORING WELL LOCATIONS AND ELEVATIONS, AND CAPUANO CENTER COMMUNITY GARDEN LOCATIONS WERE ESTABLISHED BY ON THE GROUND SURVEYS BY BSC GROUP, INC.
2. HORIZONTAL CONTROL FOR THIS PLAN WAS ESTABLISHED BY GPS AND IS BASED ON THE NORTH AMERICAN DATUM OF 1983.
3. VERTICAL CONTROL FOR THIS PLAN WAS ESTABLISHED BY GPS AND IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988.
4. STREET PROPERTY LINES, AND BUILDINGS ARE BASED ON SOMERVILLE ASSESSORS MAPS AND ARE BEST FIT RELATIVE TO THE LOCATION OF THE 50 TUFTS ST. BUILDING.
5. GEI OBSERVED ABANDONMENT OF SH-MW1 AND SH-1 THROUGH SH-5 IN 2007.



Partial Permanent Solution Statement
50 Tufts Street
Somerville, Massachusetts

UniFirst Corporation
Wilmington, Massachusetts

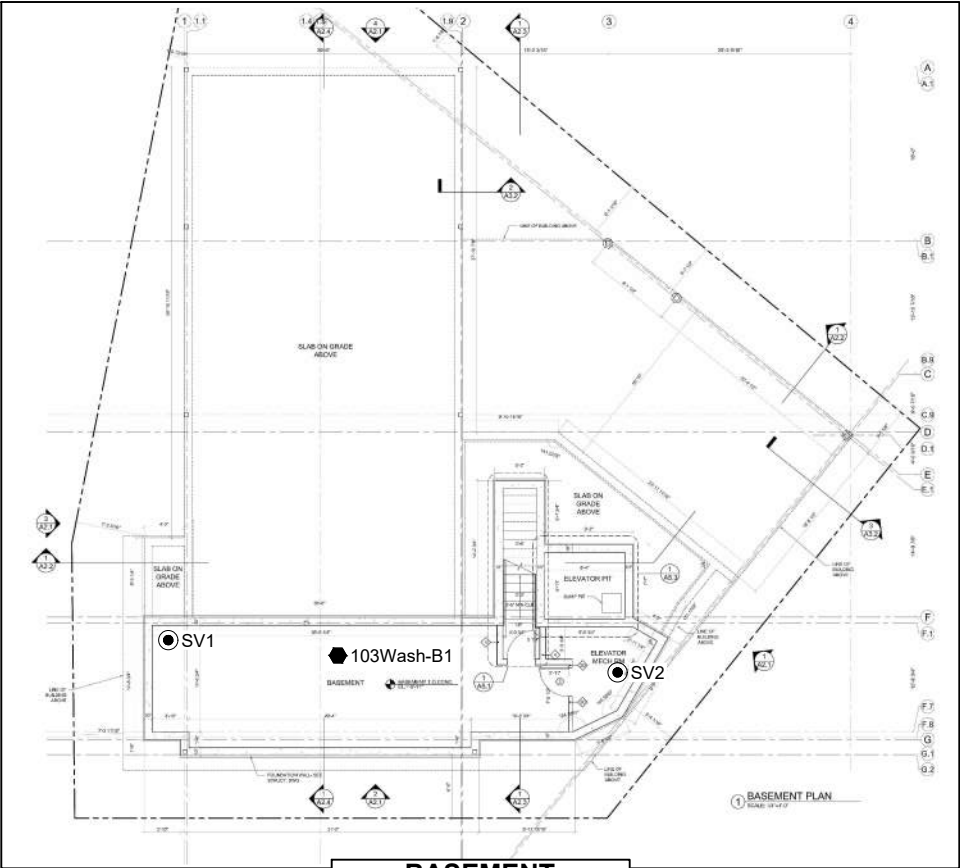


GROUNDWATER ELEVATION
CONTOUR PLAN
(April 2024)

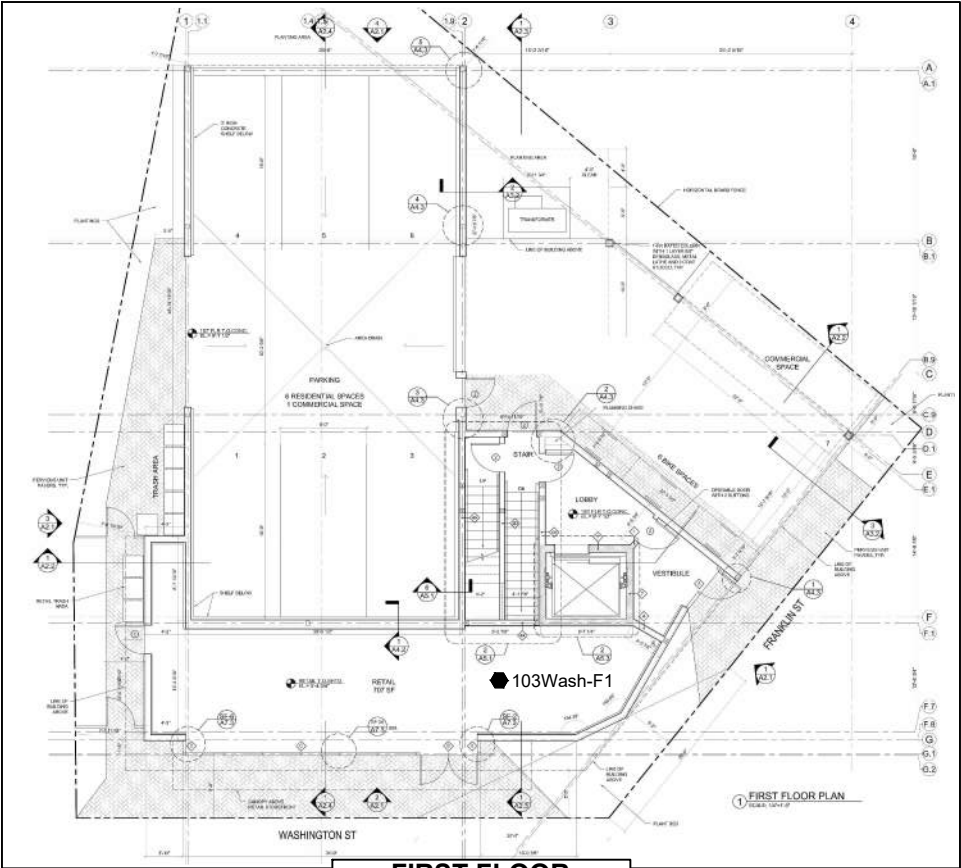
Project 045163

June 2025

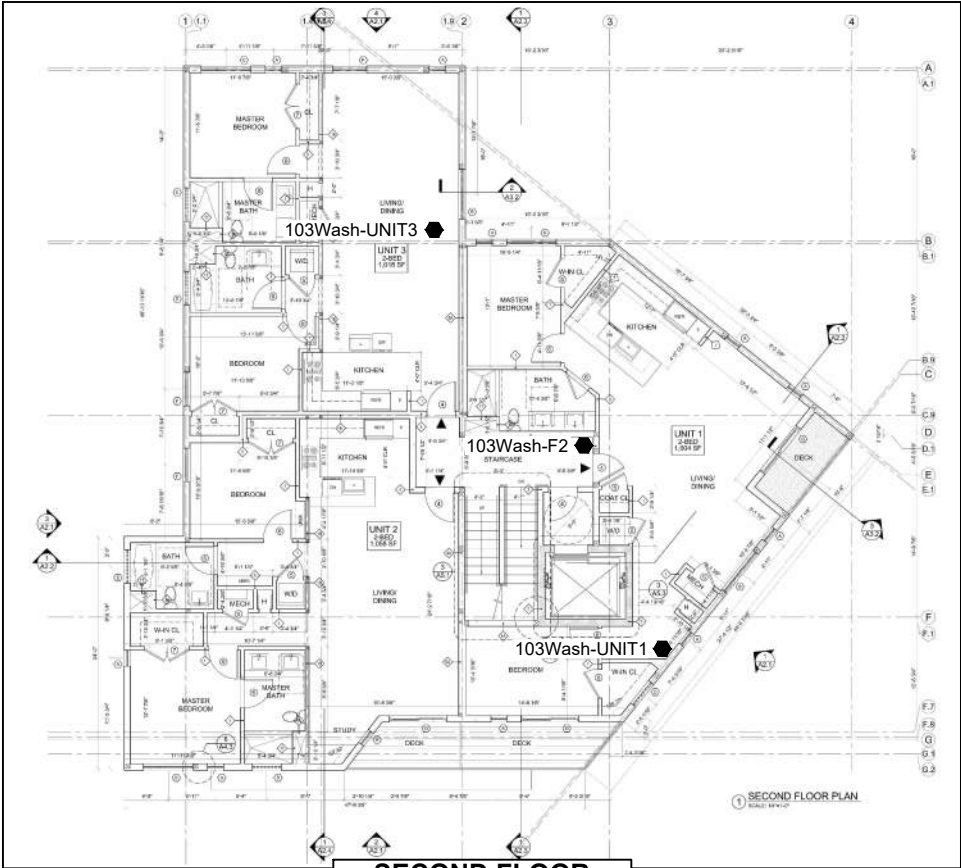
Fig. 4



BASEMENT
103 Washington Street



FIRST FLOOR
103 Washington Street



SECOND FLOOR
103 Washington Street

LEGEND:

- 103Wash ● INDOOR AMBIENT AIR SAMPLE
SV ● SOIL VAPOR SAMPLE

NOTES:

1. FLOOR PLANS FROM "103 WASHINGTON STREET, 103 WASHINGTON ST SOMERVILLE, MA 02145," BASEMENT FLOOR PLAN (SHEET A1.0), FIRST FLOOR PLAN AND SITE PLAN (SHEET A1.1), AND SECOND FLOOR PLAN (SHEET A1.2) PREPARED BY PETER QUINN ARCHITECTS LLC AND DATED 14 MAR 2019.



SCALE, FEET

Partial Permanent Solution Statement
50 Tufts Street
Somerville, Massachusetts
UniFirst Corporation
Wilmington, Massachusetts



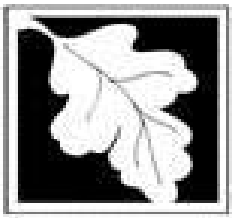
103 WASHINGTON STREET
INDOOR AMBIENT AIR SAMPLES
AND SOIL VAPOR SAMPLES
LOCATIONS

Project 045163

June 2025

Fig. 5

Appendix A BWSC Forms



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 104 12

PERMANENT AND TEMPORARY SOLUTION STATEMENT

Pursuant to 310 CMR 40.1000 (Subpart J)

Release Tracking Number

3 - 23246

For sites with multiple RTNs, enter the Primary RTN above.

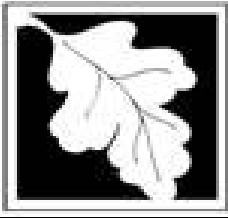
A. SITE LOCATION:

1. Site Name/Location Aid: 50 TUFTS ST & PROP ACROSS THE ST
2. Street Address: 50 TUFTS ST
3. City/Town: SOMERVILLE 4. ZIP Code: 021454129
5. Coordinates: a. Latitude: N 42.38146 b. Longitude: W 71.08663
- ☒ 6. Check here if the disposal site that is the source of the release is Tier Classified. Check the current Tier Classification Category:
- ☐ a. Tier I ☐ b. Tier ID ☒ c. Tier II

B. THIS FORM IS BEING USED TO: (check all that apply)

1. List Submittal Date of the Permanent or Temporary Solution Statement, or RAO Statement (if previously submitted): mm/dd/yyyy
- ☐ 2. Submit a Permanent or Temporary Solution Statement
- ☐ a. Check here if this Permanent or Temporary Solution Statement covers additional Release Tracking Numbers (RTNs). RTNs that have been previously linked to a Tier Classified Primary RTN do not need to be listed here.
- b. Provide the additional Release Tracking Number(s) covered by this Permanent or Temporary Solution Statement. - -
- ☐ 3. Submit a Revised Permanent or Temporary Solution Statement (or revised RAO Statement)
- ☐ a. Check here if this Revised Permanent or Temporary Solution Statement covers additional Release Tracking Numbers (RTNs), not listed on the Permanent or Temporary Solution Statement or previously submitted Revised Permanent or Temporary Solution Statements. RTNs that have been previously linked to a Tier Classified Primary RTN do not need to be listed here.
- b. Provide the additional Release Tracking Number(s) covered by this Permanent or Temporary Solution Statement. - -
- ☒ 4. Submit a Permanent or Temporary Solution Partial Statement
- Check above box, if any Response Actions remain to be taken to address conditions associated with this disposal site having the Primary RTN listed in the header section of this transmittal form. This Permanent or Temporary Solution Statement will record only a Permanent or Temporary Solution-Partial Statement for that RTN. A final Permanent or Temporary Solution Statement will need to be submitted that references all Permanent or Temporary Solution-Partial Statements and, if applicable, covers any remaining conditions not covered by the Permanent or Temporary Solution-Partial Statements.
- Also, specify if you are an Eligible Person or Tenant pursuant to M.G.L. c. 21 s.2, and have no further obligation to conduct response actions on the remaining portion(s) of the disposal site:
- ☐ a. Eligible Person ☐ b. Eligible Tenant
- ☐ 5. Submit a Revised Permanent or Temporary Solution Partial Statement (or revised RAO-Partial Statement)
- ☐ 6. Submit an optional Phase I Completion Statement supporting the Permanent or Temporary Solution Statement
- ☐ 7. Submit a Periodic Review Opinion evaluating the status of a Temporary Solution, as specified in 310 CMR 40.1051 (Section F is optional)
- ☐ 8. Submit a Retraction of a previously submitted Permanent or Temporary Solution Statement (or RAO Statement) (Sections E & F are not required)

(All sections of this transmittal form must be filled out unless otherwise noted above)



PERMANENT AND TEMPORARY SOLUTION STATEMENT

Pursuant to 310 CMR 40.1000 (Subpart J)

Release Tracking Number

3 - 23246

For sites with multiple RTNs, enter the Primary RTN above.

C. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply; for volumes, list cumulative amounts)

- ☒ 1. Assessment and/or Monitoring Only ☐ 2. Temporary Covers or Caps
☐ 3. Deployment of Absorbent or Containment Materials ☐ 4. Treatment of Water Supplies
☐ 5. Structure Venting System/HVAC Modification System ☐ 6. Engineered Barrier
☐ 7. Product or NAPL Recovery ☐ 8. Fencing and Sign Posting
☐ 9. Groundwater Treatment Systems ☐ 10. Soil Vapor Extraction
☐ 11. Remedial Additives ☐ 12. Air Sparging
☐ 13. Active Exposure Pathway Mitigation Measure(AEPM) System ☐ 14. Passive Exposure Pathway Mitigation Measure

☐ i. AEPM to address vapor intrusion

☐ ii. AEPM to address drinking water exposure

☐ 15. Monitored Natural Attenuation

☐ 16. In-Situ Chemical Oxidation

☐ 17. Removal of Contaminated Soils

☐ a. Re-use, Recycling or Treatment

☐ i. On Site

Estimated volume in cubic yards

☐ ii. Off Site

Estimated volume in cubic yards

ii. Facility Name: _____ Town: _____ State: _____

ii. Facility Name: _____ Town: _____ State: _____

iii. Describe:

☐ b. Landfill

☐ i. Cover

Estimated volume in cubic yards

Facility Name: _____ Town: _____ State: _____

☐ ii. Disposal

Estimated volume in cubic yards

Facility Name: _____ Town: _____ State: _____

☐ 18. Removal of Drums, Tanks or Containers:

a. Describe Quantity and Amount:

b. Facility Name: _____ Town: _____ State: _____

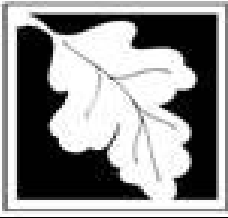
c. Facility Name: _____ Town: _____ State: _____

☐ 19. Removal of Other Contaminated Media:

a. Specify Type and Volume:

b. Facility Name: _____ Town: _____ State: _____

c. Facility Name: _____ Town: _____ State: _____



PERMANENT AND TEMPORARY SOLUTION STATEMENT

Pursuant to 310 CMR 40.1000 (Subpart J)

Release Tracking Number

3 - 23246

For sites with multiple RTNs, enter the Primary RTN above.

C. DESCRIPTION OF RESPONSE ACTIONS (cont.): (check all that apply; for volumes, list cumulative amounts)

☐ 20. Other Response Actions:

Describe:

☐ 21. Use of Innovative Technologies:

Describe:

D. SITE USE:

1. Are the response actions that are the subject of this submittal associated with the *redevelopment, reuse* or the *major expansion of the current use* of property(ies) impacted by the presence of oil and/or hazardous materials?

☐ a. Yes ☒ b. No ☐ c. Don't know

2. Is the property a *vacant or under-utilized commercial or industrial* property ("a brownfield property")?

☐ a. Yes ☒ b. No ☐ c. Don't know

3. Will funds from a state or federal brownfield incentive program be used on one or more of the property(ies) within the disposal site?

☐ a. Yes ☒ b. No ☐ c. Don't know If Yes, identify program(s):

4. Has a Covenant Not to Sue been obtained or sought?

☐ a. Yes ☐ b. No ☐ c. Don't know

5. Check all applicable categories that apply to the person making this submittal:

☐ a. Redevelopment Agency or Authority

☐ b. Community Development Corporation

☐ c. Economic Development and Industrial Corporation

☐ d. Private Developer

☐ e. Fiduciary

☐ f. Secured Lender

☐ g. Municipality

☐ h. Potential Buyer (non-owner)

☒ i. Other, describe:

OTHER PPP

This data will be used by MassDEP for information purposes only, and does not represent or create any legal commitment, obligation or liability on the part of the party or person providing this data to MassDEP.

E. PERMANENT OR TEMPORARY SOLUTION CATEGORY:

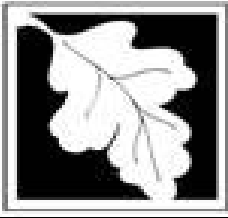
Specify the category of Solution that applies to the Disposal Site, or Site of the Threat of Release. Select either **1, 2, or 3.**

☒ **1. Permanent Solution with No Conditions** (check one)

☐ a. A threat of release has been eliminated.

☐ b. All contamination has been reduced to Background levels.

☒ c. A condition of No Significant Risk exists or has been achieved with no Activity and Use Limitation or other limitations, assumptions, or conditions (310 CMR 40.1013).



PERMANENT AND TEMPORARY SOLUTION STATEMENT

Pursuant to 310 CMR 40.1000 (Subpart J)

Release Tracking Number

3 - 23246

For sites with multiple RTNs, enter the Primary RTN above.

E. PERMANENT OR TEMPORARY SOLUTION CATEGORY (cont.):

☐ **2. Permanent Solution with Conditions** (check a and/or b):

☐ **a. An AUL has been implemented** pursuant to 310 CMR 1012(2) (check one)

☐ **i. Required** pursuant to 310 CMR 40.1012(2) (Check all that apply)

- ☐ 1. Permanent Solution is based on MCP Method 1 or 2 Soil Standards and the Exposure Point Concentration(s) of oil and/or hazardous material exceed the S-1 standards but meet applicable S-2 or S-3 standards.
- ☐ 2. A Method 3 Risk Characterization performed pursuant to 310 CMR 40.0990 relies on reduced exposure potential due to the assumption of limited site use.
- ☐ 3. The oil and/or hazardous material in soil located at a depth greater than fifteen feet from the ground surface exceeds an applicable Method 3 Ceiling Limit in Soil.
- ☐ 4. Visible coal tar waste deposits are located at a depth greater than 15 feet from the ground surface.
- ☐ 5. The Permanent Solution relies upon one or more Passive Exposure Pathway Mitigation Measures to address vapor intrusion.
- ☐ 6. The Permanent Solution relies upon one or more Active Exposure Pathway Mitigation Measures to address vapor intrusion.
- ☐ 7. The Permanent Solution relies upon one or more Exposure Pathway Mitigation Measures to address drinking water.
- ☐ 8. An existing private water supply well(s) is removed from service as a source of drinking water and maintained for uses other than as a private drinking water supply.
- ☐ 9. The thickness of visible NAPL in an excavation, boring or monitoring well remaining at such disposal site is or is anticipated to be greater than 1/2 inch.
- ☐ 10. Radioactive Material emitting Radiation above background levels is present.

☐ **ii. Optionally implemented** pursuant to 310 CMR 40.1012(3)

☐ **b. Limitations or conditions apply** pursuant to 310 CMR 40.1013 (check all that apply):

- ☐ i. Gardening Best Management Practices (BMPs) for non-commercial gardening in a residential setting
- ☐ ii. Concentrations of Oil and Hazardous Material consistent with Anthropogenic Background
- ☐ iii. Residual contamination in a Public or Railroad Right-of-Way
- ☐ iv. Groundwater contamination would exceed GW-2 Standards except for the absence of an occupied building or structure

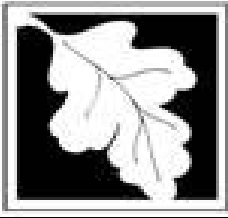
☐ **3. Temporary Solution** (check a or b /and c)

☐ **a. Response actions to achieve a Permanent Solution are not currently feasible**

☐ **b. Response actions to achieve a Permanent Solution are feasible** and are being continued toward a Permanent Solution

☐ **c. Does the Temporary Solution rely on an Active Exposure Pathway Mitigation Measure** pursuant to 310 CMR 40.1026?

- ☐ i. Yes ☐ ii. No



PERMANENT AND TEMPORARY SOLUTION STATEMENT

Pursuant to 310 CMR 40.1000 (Subpart J)

Release Tracking Number

3 - 23246

For sites with multiple RTNs, enter the Primary RTN above.

F. PERMANENT AND TEMPORARY SOLUTION INFORMATION:

1. Specify the Risk Characterization Method(s) used to achieve the Permanent or Temporary Solution, described above:

- ☐ a. Method 1 ☐ b. Method 2 ☒ c. Method 3
☐ d. Method Not Applicable-Contamination reduced to or consistent with background, or Threat of Release abated

2. Specify all Soil Category(ies) applicable. More than one Soil Category may apply at a Site. Be sure to check off all **APPLICABLE** categories:

- ☐ a. S-1/GW-1 ☐ d. S-2/GW-1 ☐ g. S-3/GW-1 ☐ j. Not Applicable
☒ b. S-1/GW-2 ☒ e. S-2/GW-2 ☒ h. S-3/GW-2
☒ c. S-1/GW-3 ☒ f. S-2/GW-3 ☒ i. S-3/GW-3

3. Specify all Groundwater Category(ies) impacted. A site may impact more than one Groundwater Category. Be sure to check off all **IMPACTED** categories:

- ☐ a. GW-1 ☒ b. GW-2 ☒ c. GW-3 ☐ d. No Groundwater Impacted

☐ 4. Check here if the risk assessment includes any changes to the groundwater category pursuant to 310 CMR 40.0932(5)(a) through (e). Check all conditions that apply:

- ☐ a. An Interim Wellhead Protection Area does not apply based on a hydrogeologic evaluation (310 CMR 40.0932(5)(a))
☐ b. Groundwater was determined not to be in a Potentially Productive Aquifer or is not feasible to be developed as a drinking water supply (310 CMR 40.0932(5)(b))
☐ c. A Non-Potential Drinking Water Source Area determination was made (310 CMR 40.0932(5)(c))
☐ d. Existing private wells were permanently closed (310 CMR 40.0932(5)(d))
☐ e. Groundwater is located within a Zone A, but is not hydrogeologically connected to a drinking water supply (310 CMR 40.0932(5)(e))

☐ 5. Check here if the Permanent or Temporary Solution supports a finding of No Significant Risk for petroleum in a GW-1 area pursuant to 310 CMR 40.0932(6)(b).

6. Specify whether remediation was conducted:

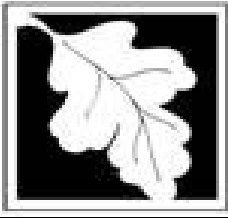
- ☐ a. Check here if soil remediation was conducted.
☐ b. Check here if groundwater remediation was conducted.
☐ c. Check here if other remediation was conducted.
Specify: _____

7. Specify whether the analytical data used to support the Permanent or Temporary Solution used the Compendium of Analytical Methods (CAM):

- ☒ a. CAM used to support all analytical data. ☐ b. CAM used to support some of the analytical data.
☐ c. CAM not used.

☐ 8. Check here to indicate that the Permanent or Temporary Solution Statement includes a Data Usability Assessment and Data Representativeness Evaluation pursuant to 310 CMR 40.1056.

9. Estimate the number of acres this Permanent or Temporary Solution Statement applies to: _____



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 104 12

PERMANENT AND TEMPORARY SOLUTION STATEMENT

Pursuant to 310 CMR 40.1000 (Subpart J)

Release Tracking Number

3 - 23246

For sites with multiple RTNs, enter the Primary RTN above.

G. LSP SIGNATURE AND STAMP:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and 309 CMR 4.03(2), and (iii) the provisions of 309 CMR 4.03(3), to the best of my knowledge, information and belief,

> if Section B indicates that either a **Permanent or Temporary Solution Statement, Phase I Completion Statement and/or Periodic Review Opinion** is being provided, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal.

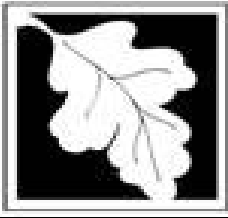
I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

1. LSP#: 9719
2. First Name: ILEENS 3. Last Name: GLADSTONE
4. Telephone: 7817214012 5. Ext.: 6. Email: igladstone@geiconsultants.com
7. Signature:
8. Date: mm/dd/yyyy 9. LSP Stamp:

DRAFT COPY

H. PERSON MAKING SUBMITTAL:

1. Check all that apply: ☐ a. change in contact name ☐ b. change of address ☐ c. change in the person undertaking response actions
2. Name of Organization: UNIFIRST CORPORATION
3. Contact First Name: CATHERINE 4. Last Name: MALAGRIDA
5. Street: 68 JONSPIN RD 6. Title: ENV COMPLIANCE MANAGER
7. City/Town: WILMINGTON 8. State: MA 9. ZIP Code: 018871090
10. Telephone: 9786588888 11. Ext.: 12. Email: catherine_malagrada@unifirst.com



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 104 12

PERMANENT AND TEMPORARY SOLUTION STATEMENT

Pursuant to 310 CMR 40.1000 (Subpart J)

Release Tracking Number

3 - 23246

For sites with multiple RTNs, enter the Primary RTN above.

I. RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON MAKING SUBMITTAL:

☐ Check here to change relationship

☒ 1. RP or PRP

☐ a. Owner

☐ b. Operator

☐ c. Generator

☐ d. Transporter

☒ e. Other RP or PRP

Specify:

OTHER PRPS

☐ 2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)

☐ 3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))

☐ 4. Any Other Person Making Submittal

Specify Relationship: _____

J. REQUIRED ATTACHMENT AND SUBMITTALS:

☐ 1. Check here if the Permanent or Temporary Solution on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by DEP or EPA. If the box is checked, you MUST attach a statement identifying the applicable provisions thereof.

☐ 2. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the submittal of a Permanent or Temporary Solution Statement that relies on the public way/rail right-of-way exemption from the requirements of an AUL.

☒ 3. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the submittal of a Permanent or Temporary Solution Statement with instructions on how to obtain a full copy of the report.

☒ 4. Check here to certify that documentation is attached specifying the location of the Site, or the location and boundaries of the Disposal Site subject to this Permanent or Temporary Solution Statement. If submitting a Permanent or Temporary Solution Statement for a PORTLAND or a Genosol Site, you must document the location and boundaries for both the portion subject to this submittal and, to the extent defined by the entire Disposal Site.

☒ 5. Check here to certify that, pursuant to 310 CMR 2.1406, notice was provided to the owner(s) of each property within the disposal site boundaries, or notice was not required because the disposal site boundaries are limited to property owned by the party conducting response actions. (check all that apply)

☒ a. Notice was provided prior to, or concurrent with the submittal of a Phase II Completion Statement to the Department.

☐ b. Notice was provided prior to, or concurrent with the submittal of this Permanent or Temporary Solution Statement to the Department.

☐ c. Notice not required.

d. Total number of property owners notified, if applicable:

112

☐ 6. Check here if you are submitting one or more AULs. You must submit an AUL Transmittal Form (BWSC113) and a copy of each implemented AUL related to this Permanent Solution or Temporary Solution Statement. Specify the type of AUL(s) below: (required for Permanent Solution with Conditions Statements where an AUL is being implemented)

☐ a. Notice of Activity and Use Limitation

b. Number of Notices submitted: _____

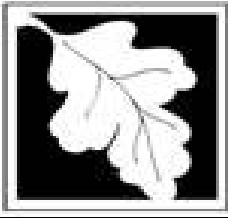
☐ c. Grant of Environmental Restriction

d. Number of Grants submitted: _____

☐ 7. If a Permanent Solution Compliance Fee is required for any of the RTNs listed on this transmittal form, check here to certify that a Permanent Solution Compliance Fee was submitted to DEP, P. O. Box 4062, Boston, MA 02211.

☐ 8. Check here if any non-updatable information provided on this form is incorrect, e.g. Site Address/Location Aid. Send corrections to bwsc.edep@Mass.gov.

☒ 9. Check here to certify that the LSP Opinion containing the material facts, data, and other information is attached.



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 104 12

PERMANENT AND TEMPORARY SOLUTION STATEMENT

Pursuant to 310 CMR 40.1000 (Subpart J)

Release Tracking Number

3 - 23246

For sites with multiple RTNs, enter the Primary RTN above.

K. CERTIFICATION OF PERSON MAKING SUBMITTAL:

1. I, _____, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

2. By: _____ 3. Title: ENV COMPLIANCE MANAGER
Signature

4. For: UNIFIRST CORPORATION 5. Date: _____
(Name of person or entity recorded in Section H) mm/dd/yyyy

☐ 6. Check here if the address of the person providing certification is different from address recorded in Section H.

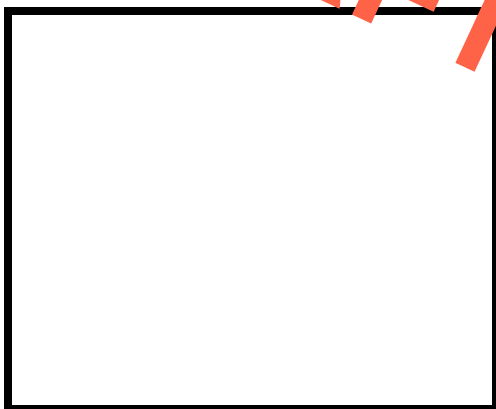
7. Street: _____

8. City/Town: _____ 9. State: _____ 10. ZIP Code: _____

11. Telephone: _____ 12. Ext.: _____ 13. Email: _____

YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE ASSURANCE FEE OF UP TO \$10,000 PER BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.

Date Stamp (DEP USE ONLY):



DRAFT COPY

Appendix B Public Notice Letters

June 12, 2025
Project No. 04516-3

Dr. Brian Green
Chairman, Board of Health
City Hall Annex
50 Evergreen Avenue
Somerville, MA 02145-2819

**Re: Partial Permanent Solution Statement
103 Washington Street, Somerville, Massachusetts
MassDEP RTN 3-23246**

Dear Dr. Green:

On behalf of UniFirst Corporation (UniFirst) of Wilmington, Massachusetts, GEI Consultants, Inc. is notifying your office that a Partial Permanent Solution Statement has been prepared for the portion of the 50 Tufts Street disposal site (Site) identified as 103 Washington Street in Somerville, Massachusetts (Property).

The conclusions of the Partial Permanent Solution Statement include the following:

- No Significant Risk (NSR): A condition of NSR to human health, safety, public welfare, and the environment exists for all receptors with No Conditions at the Property, and no remedial actions are required.
- Source Elimination and Control: There are no unpermitted releases of oil or hazardous material (OHM) at the Site, and the sources of OHM at the Site are eliminated to the extent feasible and are controlled.
- Migration Control: The groundwater and soil vapor plumes at the Site are stable.
- Non-Aqueous Phase Liquid (NAPL): Visible NAPL has not been observed at the Site, and any dense non-aqueous phase liquid (DNAPL) that may be present is not migrating and exists in a stable configuration. The Phase III for the Site demonstrated that it is not feasible to eliminate DNAPL.
- An Activity and Use Limitation (AUL) is not required to maintain a condition of NSR at the Property.

The Partial Permanent Solution Statement has been submitted to the Massachusetts Department of Environmental Protection (MassDEP) Northeast Regional Office in Woburn, Massachusetts for the above-referenced Site.

If you have any questions, please do not hesitate to contact me at 781.721.4012 or igladstone@geiconsultants.com.

Sincerely,

GEI CONSULTANTS, INC.



Christopher Coner, CHMM
Project Manager



Ileen S. Gladstone, P.E., LSP, LEED AP
Senior Vice President

cc: Catherine Malagrida, UniFirst Corporation
Massachusetts Department of Environmental Protection

CC/ISG:bdp

B:\Private\04516\19.0 Reports in Progress\19.10 Partial RAOs\Wave 2-VI at NSR\Washington Street\103 Washington Street\App B - Public Notice Letters\103 Washington St PSWNC-P BOH Notification Ltr.docx

June 12, 2025
Project No. 04516-3

Mayor Katjana Ballantyne
Somerville City Hall
93 Highland Avenue
Somerville, MA 02143-1740

**Re: Partial Permanent Solution Statement
103 Washington Street, Somerville, Massachusetts
MassDEP RTN 3-23246**

Dear Mayor Ballantyne:

On behalf of UniFirst Corporation (UniFirst) of Wilmington, Massachusetts, GEI Consultants, Inc. is notifying your office that a Partial Permanent Solution Statement has been prepared for the portion of the 50 Tufts Street disposal site (Site) identified as 103 Washington Street in Somerville, Massachusetts (Property).

The conclusions of the Partial Permanent Solution Statement include the following:

- No Significant Risk (NSR): A condition of NSR to human health, safety, public welfare, and the environment exists for all receptors with No Conditions at the Property, and no remedial actions are required.
- Source Elimination and Control: There are no unpermitted releases of oil or hazardous material (OHM) at the Site, and the sources of OHM at the Site are eliminated to the extent feasible and are controlled.
- Migration Control: The groundwater and soil vapor plumes at the Site are stable.
- Non-Aqueous Phase Liquid (NAPL): Visible NAPL has not been observed at the Site, and any dense non-aqueous phase liquid (DNAPL) that may be present is not migrating and exists in a stable configuration. The Phase III for the Site demonstrated that it is not feasible to eliminate DNAPL.
- An Activity and Use Limitation (AUL) is not required to maintain a condition of NSR at the Property.

The Partial Permanent Solution Statement has been submitted to the Massachusetts Department of Environmental Protection (MassDEP) Northeast Regional Office in Woburn, Massachusetts for the above-referenced Site.

If you have any questions, please do not hesitate to contact me at 781.721.4012 or igladstone@geiconsultants.com.

Sincerely,

GEI CONSULTANTS, INC.



Christopher Coner, CHMM
Project Manager



Ileen S. Gladstone, P.E., LSP, LEED AP
Senior Vice President

cc: Catherine Malagrida, UniFirst Corporation
Massachusetts Department of Environmental Protection

CC/ISG:bdp

B:\Private\04516\19.0 Reports in Progress\19.10 Partial RAOs\Wave 2-VI at NSR\Washington Street\103 Washington Street\App B - Public Notice Letters\103 Washington St PSWNC-P Mayor Notification Ltr.docx

June 12, 2025
Project No. 04516-3

Ms. Vera Rodrigues
Hodan Property Management
105 Washington Street
Somerville, MA 02143

**Re: MCP Closure Document for 103 Washington Street
50 Tufts Street Site, Somerville, Massachusetts
MassDEP RTN 3-23246**

Dear Ms. Rodrigues:

On behalf of UniFirst Corporation (UniFirst) of Wilmington, Massachusetts, and in accordance with the Massachusetts Contingency Plan (MCP; 310 CMR 40.1406), GEI Consultants, Inc. is providing you with the attached "Partial Permanent Solution Statement for 103 Washington Street, Somerville, Massachusetts" (the Property). As you are aware, GEI has been investigating environmental conditions in the vicinity of the 50 Tufts Street property in Somerville, Massachusetts (the Site) for the past several years in accordance with the MCP. Your Property (103 Washington Street) was part of that investigation. Figure 2 in the enclosed document shows the Property in relation to the Site boundary. The Site is identified by Massachusetts Department of Environmental Protection (MassDEP) Release Tracking Number (RTN) 3-23246.

As stated in the enclosed document, GEI has determined, as a result of assessment actions, that a level of No Significant Risk (NSR) exists under the MCP and, therefore, no remedial actions are necessary with respect to the Property. In the MCP, such an outcome is a form of regulatory endpoint referred to as a Permanent Solution with No Conditions.

A copy of the enclosed document is being submitted to you in accordance with the MCP. You do not need to respond to this letter. However, if you have any questions, please feel free to contact me at 781.721.4012 or at igladstone@geiconsultants.com.

Sincerely,

GEI CONSULTANTS, INC.



Christopher Coner, CHMM
Project Manager



Ileen S. Gladstone, P.E., LSP, LEED AP
Senior Vice President

Enclosures

cc: Catherine Malagrida, UniFirst Corporation
Massachusetts Department of Environmental Protection

CC/ISG:bdp
B:\Private\04516\19.0 Reports in Progress\19.10 Partial RAOs\Wave 2-VI at NSR\Washington Street\103 Washington Street\App B - Public Notice Letters\103 Washington Street Transmittal Ltr PSWNC-P.docx



**Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup**

BWSC122

This notice is related to:
Release Tracking Number

INFORMATIONAL NOTICE TO PROPERTY OWNERS

As Required by 310 CMR 40.1406 of the Massachusetts Contingency Plan (MCP)

-

A. DISPOSAL SITE ADDRESS: (associated with Release Tracking Number provided above)

1. Street Address: _____
2. City/Town: _____ 3. ZIP Code: _____
4. Assessor's Parcel ID: _____

B. THIS NOTICE IS BEING PROVIDED TO THE FOLLOWING PROPERTY OWNER:

1. Name of Property Owner: _____
2. Address of Property For Which This Notice is Being Provided: (property owned by person named in B1)
- a. Street Address: _____
- b. City/Town: _____ c. ZIP Code: _____
3. Assessor's Parcel ID: _____

C. THIS NOTICE IS BEING GIVEN : (check one)

- ☐ 1. Upon Completion of a Phase II Comprehensive Site Assessment.
- ☐ 2. Upon Submittal of a Permanent or Temporary Solution Statement (i.e., Site Closure Report).
- ☐ 3. Upon Completion of Additional Investigation showing that Oil or Hazardous Material is not Present at the Property.

D. DESCRIPTION OF OIL AND/OR HAZARDOUS MATERIAL PRESENT OR LIKELY TO BE PRESENT AT THE PROPERTY :
(check all that apply)

AFFECTED ENVIRONMENTAL MEDIA

PRINCIPAL CHEMICAL(S) PRESENT

- | | |
|---|-------|
| ☐ 1. Soil | _____ |
| ☐ 2. Groundwater | _____ |
| ☐ 3. Surface Water | _____ |
| ☐ 4. Sediment | _____ |
| ☐ 5. Indoor Air | _____ |
| ☐ 6. Soil Gas | _____ |
| ☐ 7. Other: _____ | _____ |
- (specify)

E. ATTACHMENTS PROVIDED WITH THIS NOTICE, AS REQUIRED BY 310 CMR 40.1406:

- ☐ 1. A Copy of the Map Showing or a Description Describing the Area where the Oil and/or Hazardous Material is or is likely to be Present.
- ☐ 2. A Copy of the Phase II Comprehensive Site Assessment or Permanent or Temporary Solution Statement Conclusions.
- ☐ 3. Specify the category of Solution that applies to the Disposal Site.
- ☐ 1. Permanent Solution with No Conditions.
- ☐ 2. Permanent Solution with Conditions.
- ☐ i. An Activity and Use Limitation has been implemented.
- ☐ ii. An Activity and Use Limitation has not been implemented.
- ☐ 3. Temporary Solution.



**Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup**

BWSC122

This notice is related to:
Release Tracking Number

INFORMATIONAL NOTICE TO PROPERTY OWNERS

As Required by 310 CMR 40.1406 of the Massachusetts Contingency Plan (MCP)

 -

F. CONTACT INFORMATION RELATING TO THE PARTY PROVIDING THIS NOTICE:

1. Name of Organization: _____
2. Contact First Name: _____ 3. Last Name: _____
4. Street: _____ 5. Title: _____
6. City/Town: _____ 7. State: _____ 8. ZIP Code: _____
9. Telephone: _____ 10. Email: _____

MASSACHUSETTS REGULATIONS THAT REQUIRE THIS NOTICE

This notice is being provided pursuant to the Massachusetts Contingency Plan and the notification requirement at 310 CMR 40.1406. The Massachusetts Contingency Plan is a state regulation that specifies requirements for parties who are taking actions to address releases of chemicals (oil or hazardous material) to the environment.

THE PERSON(S) PROVIDING THIS NOTICE

This notice has been sent to you by the party(ies) who is/are addressing a release of oil or hazardous material to the environment at the location listed in **Section A** on the reverse side of this form.

PURPOSE OF THIS NOTICE

Parties who are taking actions to respond to releases of oil or hazardous material to the environment are required by state regulations (referred to above) to notify the owners of property where the oil or hazardous material is or is likely to be present. These same parties are also required to notify property owners upon completion of actions to address the oil or hazardous material, or if additional investigations show that the oil or hazardous material is not present at a property. **Section C** on the reverse side of this form indicates the circumstance under which you are receiving this notice at this time.

INFORMATION RELATED TO YOUR PROPERTY

Section D on the reverse side of this form indicates the type(s) of oil or hazardous material that is or is likely to be present at your property, and the environmental medium (e.g., soil or groundwater) where it is or is likely to be present. **Please note** that when an investigation indicates that the oil or hazardous material is or is likely to be present at your property, this does not mean that the oil or hazardous material is posing a health risk to you. Parties who are taking actions to address oil and hazardous material releases are required by state regulations to adequately investigate these releases and take necessary actions to ensure that affected properties meet standards that are protective of human health and the environment.

ATTACHED MAP OR DESCRIPTION AND REPORT CONCLUSIONS

The party providing this notice to you is required to attach a map or description that indicates the boundaries of the area where the oil or hazardous material is or is likely to be present, and the conclusions of the site investigation or closure report (**Section E**). These attachments should give you additional information about the nature and location of the oil or hazardous material with respect to your property.

FOR MORE INFORMATION

Information about the general process for addressing releases of oil or hazardous material under the Massachusetts Contingency Plan and related public involvement opportunities may be found at <http://www.mass.gov/eea/agencies/massdep/cleanup>.

For more information regarding this notice, you may contact the party listed in **Section F** of this form. Information about the disposal site identified in **Section A** is also available in files at the Massachusetts Department of Environmental Protection.

See <http://public.dep.state.ma.us/SearchableSites2/Search.aspx> to view site-specific files on-line or <http://mass.gov/eea/agencies/massdep/about/contacts/conduct-a-file-review.html> if you would like to make an appointment to see these files in person. Please reference the **Release Tracking Number** listed in the upper right hand corner on the reverse side of this form when making file review appointments.

Appendix C Permanent Solution Statement (RTN 3-34310)



50 Salem Street, Building A, Suite 108
Lynnfield, MA 01940
617-623-8880 • Fax: 781-224-9713
www.iesinc.com

Direct Dial Numbers
David Borans: (617) 776-8549
Daniel Jaffe: (617) 776-2715
617-623-8880
Kerry Asetta: x-206
John Beck: x-205
Christopher Buchanan: x-203
Ligia Rivera: x-207
Steven Iorio: x-208
Kevin Taylor: x-210
Melissa Alvarado: x-212

December 8, 2017

eDEP
Massachusetts Department of Environmental Protection
Northeast Regional Office
Bureau of Waste Site Cleanup
205B Lowell Street
Wilmington, MA 01887

RE: Statement of Provisions
Permanent Solution Statement
103 Washington Street
Somerville, MA
RTN 3-34310

Dear eDEP:

IES, Inc. is please to submit electronically, the information concerning the above referenced Disposal Site (RTN 3-34310).

1. "Permanent and Temporary Solution Statement" Transmittal Form (BWSC104) submitted via eDEP.
2. Supporting Documents – "Permanent Solution Statement" report, dated December 8, 2017 completed for the site by IES, Inc. of Lynnfield, MA.
3. eDEP authorization letter (included in Permanent Solution Statement report).

Please do not hesitate to call with any questions,

Respectfully submitted,
IES, Inc.

Daniel G. Jaffe
President

**Massachusetts Department of Environmental Protection
Northeast Regional Office
Bureau of Waste Site Cleanup
205B Lowell Street
Wilmington, MA 01887**

December 8, 2017

Permanent Solution Statement

**103 Washington Street
Somerville, MA**

Release Tracking Number (RTN) 3-34310

Prepared By:
IES, Inc.
50 Salem Street
Building A, Suite 108
Lynnfield, MA 01940
617-623-8880



TABLE OF CONTENTS

SECTION	PAGE
1. Introduction	1
2. Previous Reports	3
3. Disposal Site History	4
4. Site Geology & Hydrology	14
5. Sensitive Receptors	15
6. 40.1056(2): Conceptual Site Model	17
(a) A clear and accurate description of the location of the site or the location and boundaries of the disposal site;	17
(b) A succinct summary of the Conceptual Site Model;	18
(c) A demonstration that all Sources of OHM Contamination have been eliminated or controlled as specified in 310 CMR 40.1003(5)(a) and (b);	19
(d) A demonstration that response actions have been taken to adequately assess and, if necessary, control the subsurface migration of OHM remaining at the disposal site as specified in 310 CMR 40.1003(6)(a);	20
(e) Where NAPL is or has been present, a demonstration that response actions have been taken to adequately assess and if necessary control NAPL mobility and meet the requirements of 310 CMR 40.1003(7)(a);	21
(f) Information supporting the conclusion that a level of No Significant Risk has been achieved or exists;	21
(g) Information documenting the extent to which levels of oil and/or hazardous material in the environment have been reduced to Background, and/or the results of the feasibility evaluation conducted pursuant to 310 CMR 40.0860 demonstrating that the achievement of Background is not feasible;	22
(h) A copy of any and all Activity and Use Limitations which have been implemented under 310 CMR 40.1070;	24
(i) For Permanent Solutions with Conditions where concentrations in Soil exceed Upper Concentration Limits in Soil at a depth greater than 15 feet from the ground surface or in an area beneath an engineered barrier, the results of the evaluation conducted pursuant to 310 CMR 40.0860 demonstrating that the achievement of Upper Concentration Limits in Soil located at a depth greater than 15 feet from the ground surface or in the area beneath an engineered barrier is not feasible;	24

- (j) For a Permanent Solution with Conditions based upon assumptions about the current or future site activities, uses or conditions that do not require an Activity and Use Limitation pursuant to 310 CMR 40.1013, documentation related to such assumptions and conditions; 25
- (k) A Data Usability Assessment documenting that the data relied upon is scientifically valid and defensible, and of a sufficient level of precision, accuracy, and completeness to support the Permanent Solution, and a Data Representativeness Evaluation, documenting the adequacy of the spatial and temporal data sets to support the Permanent Solution; 25
- (l) A description of any operation, maintenance, and/or monitoring that will be required to confirm and/or maintain those conditions at the disposal site upon which the Permanent Solution is based; 28

7. Conclusions 29

ATTACHMENTS

ATTACHMENT “A”:

Figure 1 - USGS Map
Figure 2 – Assessors Map
Figure 3 – Site Plan (Pre-RAM)
Figure 4 – Site Plan (Post-RAM)
Figure 5 – MassGIS Priority Resources Map

ATTACHMENT “B”

Tables:
Table 1 - Soil Sample Screening Results (April 2017)
Table 2 – Pre-RAM Soil Sample Results (April 2017)
Table 3 – Groundwater Testing Results (April 2017)
Table 4 – Post-RAM Soil Sample Results
Table 4A – Post-RAM Soil Sample Results
Table 5 – Soil Characterization Results

ATTACHMENT “C”

Test Boring Logs

ATTACHMENT “D”

Laboratory Reports:
April 2017 Soil Samples
April 2017 Groundwater Samples
Post-Excavation Soil Samples
Stockpile Characterization Samples

ATTACHMENT “E”

Soil Disposal Documentation:
EMSI Approval Letter
Bill-of-Lading
ESMI Disposal Ticket

ATTACHMENT “F”

MCP Method 1 Risk Characterization

ATTACHMENT “G”:

BWSC Form (submitted via eDEP)
Public Notification Letters
eDEP Authorization Letter

Permanent Solution Statement
103 Washington Street, Somerville, MA
RTN 3-34310

SECTION 1

Introduction

On behalf of WASH DEV, LLC, the Site Owner, IES has prepared a “Permanent Solution Statement” (PSS) submittal for the Disposal Site at 103 Washington Street in Somerville, MA (RTN 3-34310), pursuant to 310 CMR 40.1000. Investigation activities have been conducted at the Site, and this report has been prepared in a format established at 310 CMR 40.1057 for the purpose of documenting achievement of a Permanent Solution.

As indicated in a Notice of Responsibility (NOR) dated June 28, 2017, the Disposal Site was reported to DEP on May 30, 2017 due to “a release of Oil and/or Hazardous Material at the above referenced property, which exceeds a 120-day reporting threshold (310 CMR 30.0315) and which requires one or more Response Actions”. The release involved the presence of elevated levels of C₅-C₈ Aliphatic Hydrocarbons (1,700 mg/kg), C₉-C₁₀ Aromatic Hydrocarbons (640 mg/kg), C₉-C₁₂ Aliphatic Hydrocarbons (1,900 mg/kg), and Naphthalene (5 mg/kg) in the soil above the applicable Reportable Concentrations (RCS-1) of 100 mg/kg for C₅-C₈ Aliphatics and C₉-C₁₀ Aromatics; 1,000 mg/kg for C₉-C₁₂ Aliphatics; and 4 mg/kg for Naphthalene. Laboratory testing of groundwater samples collected from five monitoring wells installed at the 0.13-acre site did not identify a reportable release of gasoline to the groundwater associated with RTN 3-34310.

It is noted that elevated levels of Tetrachloroethylene (0.2 mg/l) and Trichloroethylene (0.046 mg/l), above the applicable Reportable Concentrations of 0.05 mg/l and 0.005 mg/l, respectively, were previously identified at the site. However, this release has been delineated within the contaminant plume associated with RTN 3-23246 at 50 Tufts Street, and is being addressed via Response Actions conducted under RTN 3-23246. Therefore, a Downgradient Property Status (DPS) submittal is not warranted, and the elevated levels of TCE and PCE in the groundwater are considered a release which does not require reporting pursuant to 310 CMR 40.0317(16), since (a) a response action is being undertaken in compliance with the provisions of 310 CMR 40.0000 to address such release; (b) a release notification was previously provided to the Department for the disposal site on which the release has been observed or documented; and (c) “such presence of oil and/or hazardous material is consistent with the types, nature, exposure potential and quantities of oil and/or hazardous material for which that notification was provided to the Department.

The subject site consists of one, 0.13-acre, irregular-shaped parcel of land located at the intersection of Washington and Franklin Streets in the City of Somerville, MA. The site is currently occupied by a one-story, 2,094 square foot, masonry and wood building, constructed in approximately 1920 on a concrete slab without a basement. The site building is currently vacant, but was last utilized as an automobile repair shop (County Auto Repair),

which vacated the premises in early 2017; and before that, as a gasoline filling station from the early 1930's until 1987.

SECTION 2**Previous Reports**

Prior reports prepared for or relating to the subject site include the following:

1. "Soil Vapor Sampling Results", dated June 8, 2007 by GEI Consultants, Inc. of Winchester, MA.
2. "Limited Subsurface Investigation" (performed at 99 Franklin Street), dated July 17, 2013, by Harvey Associates of Hingham, MA
3. "Phase 1 Environmental Site Assessment" report, dated March 24, 2017, by IES, Inc. of Lynnfield, MA.
4. "Subsurface Investigation" report, dated April 24, 2017, by IES, Inc.
5. "Release Abatement Measure (RAM) Plan Submittal", dated June 5, 2017, by IES, Inc.
6. "Release Abatement Measure (RAM) Status Report #1", dated October 3, 2017, by IES, Inc.
7. "Release Abatement Measure (RAM) Completion Statement" report, dated December 8, 2017, by IES, Inc.

SECTION 3

Disposal Site History

A review of Sanborn Historical Atlases (dated 1888, 1900, 1933, 1950, 1989 and 1991) and City of Somerville Inspectional Services and Fire Prevention Office records dating back to 1898, revealed that in 1888 the subject site was occupied by a two-story building constructed on a larger lot that included a “cobbler” shop at present day 99-101 Franklin Street. By 1900, the two-story building had been reduced in size, and the cobbler shop had been replaced by the existing house at the abutting property at 99-101 Franklin Street.

According to City of Somerville records, the current building was constructed in 1920. Subsequently, in April of 1931, a “Certificate of Registration” was issued by the Commonwealth of Massachusetts for the storage of an unknown quantity of flammable liquids at the site. As depicted on the 1933 Sanborn Atlas, the site property lines were redrawn to their current configuration and the original two-story building had been replaced by a “filling station” with three “gasoline tanks,” located along the north property line adjacent to Franklin Street.

In 1950, a license was issued by the City of Somerville to store a 100-gallon drum of “anti-freeze alcohol” on-site. Between 1956 and 1999, a license was issued by the City of Somerville to the owner at that time (John Beucler) to store “4 automobiles” on site. In February of 1958, Fire Department records show a 1,000-gallon gasoline tank was removed from “Beucler Gasoline Station.” In May 1962, the Commonwealth of Massachusetts Department of Public Safety - Division of Fire Prevention issued to “Aquino Auto Sales & Services, Inc.” at 103 Washington Street, a registration for “10,000 gallons of gasoline, 1,000 gallons of waste oil, 110 gallons of fuel oil, 20 gallons of alcohol, 50 gallons of motor oil, 8 gallons of grease, and 100 gallons of anti-freeze alcohol.” Further details about the expanded gasoline storage capacity at the site are limited to an undated plan in Fire Department files showing the proposed locations for the installation of two 4,000 gallon USTs, east of the site building. Later, in September of 1962, Somerville Fire Department records indicate a “1,000 gallon, empty gasoline tank” was removed from the site.

In 1985, a Somerville Fire Prevention Office inventory of underground storage tanks at “Aquino Auto Sales & Services, Inc.” listed the presence of four, on-site, steel tanks, including 3,000-gallon and 2,000-gallon USTs containing gasoline, a 1,000-gallon UST containing waste oil, and a 275-gallon AST containing fuel oil. In May of 1987, Fire Prevention Office documents indicate that these tanks were excavated and removed from the site, although it should be noted that neither a UST Closure Report nor a “receipt of disposal” for the tanks was discovered in City files. Similarly, the City of Somerville Bureau of Fire Prevention and Investigations stated in a letter dated June 1987, that the tank removal contractor (L&M Construction) “returned one (1) of the four (4) tanks [L&M excavated] to its original location in Somerville, and just dumped same into the excavation pit.”

Following the removal of the storage tanks in 1987, gasoline sales at the site ceased, and the site was used exclusively for automobile repair operations (County Auto Repair.) According

to the 1989 Sanborn Atlas, the filling station building had been expanded to include two automobile repair bays at the northwest end of the building. A Fire Department record of “Yearly Maintenance Permits” for OHM (dated June 2013) indicates that County Auto Repair stored on-site in above ground containers, “250 gallons of Motor Oil, 4 - 55 gallon drums of Waste Oil, 275 gallons of Heating Oil (outside), and 5 - 55 gallon drums of Antifreeze.” Automotive repair operations were discontinued at the site earlier this year when the building was purchased by the current owner in February of 2017; and the site building has remained vacant since that time.

The Disposal Site is located in a mixed residential and commercial section of Somerville, and is abutted to the south by Washington Street; to the east by Franklin Street; to the north by a multi-family dwelling at 99-101 Franklin Street; and to the west by a dwelling at 105 Washington Street. The area located further to the south of the site, across Washington Street, is occupied by a parking lot and an abandoned retail plaza (The Cobble Hill Center) at 102 Washington Street; and the area located further to the east of the site, across Franklin Street, is occupied by a bar (Michael’s) at 97 Washington Street, and further to the east is a vehicle repair shop at 91 Washington Street.

The area located further to the north of the site, beyond the abutting dwelling, is occupied by additional residential properties at 91, 95, and 97 Franklin Street, and the “Capuano Early Childhood Center” is located approximately 225 feet to the north of the site at 150 Glen Street. Finally, the area located further to the west of the site, beyond the abutting dwelling, is occupied by dwellings at 111 and 117 Washington Street, and a restaurant (Buddy’s) at 113 Washington Street.

With regard to the historical usage of the surrounding area, Sanborn Atlases indicated that the block of properties to the north and west of the site were primarily occupied by residential houses in 1888 and 1900, with “stores” located at 109, 117 and 123 Washington Street. An open area surrounded by “sheds” abutted the site to the northwest; by 1933, the sheds had been enlarged and were apparently used to house “wagons” and a “work shop.” By 1950, the sheds were gone. The rest of neighborhood to the north and west of the site remained residential up to the present day.

A review of the Sanborn Atlases to the east of the site, reveals that the site has been abutted by Franklin Street since at least 1888. Across Franklin Street, on the corner with Washington Street (i.e. 97-101 Washington Street), that property was occupied by a store and two-family dwelling from 1888 to at least 1900. By 1933, a new structure had been built that was utilized as a “wagon shop” and “auto repair.” Several “Certificates of Registration” were issued during the early 1930’s by the Commonwealth of Massachusetts to this property for the “storage and sale” of 4,000 to 5,000 gallons of gasoline. By 1950, the wagon and repair shops had been replaced by the current building that has since been used as a store, restaurant and bar.

Sanborn Atlases also revealed that the site has been abutted by Washington Street since at least 1888. In 1888, much of the area south of Washington Street was occupied by the “McLean Insane Asylum.” By 1933 until at least 1950, this facility had been replaced by the

“American Oil Products Company” and a “filling station” at 100-110 and 120 Washington Street, respectively. The Sanborn Atlases show numerous “above ground oil tanks” located on the south side of this property, and two “gasoline tanks” at the filling station. East of these businesses, at 76 to 88 Washington Street, was an iron foundry from 1900 until at least 1950. A review of historic aerial photographs (see historicaerials.com) reveals that that all the buildings on these properties (i.e. 76 to 120 Washington Street) were razed in the late 1960’s and early 1970’s. Finally, by 1989, the existing shopping plaza (The Cobble Hill Center) at 102 Washington Street had been constructed.

June 8, 2007 “Soil Vapor Sampling Results”

Based on results of a 2007 soil vapor sample collected from beneath the building slab, elevated levels of chlorinated volatile organic compounds (VOCs) were impacting the site from a contaminant plume originating from an upgradient source located 50 Tufts Street. GEI Consultants, Inc. recommended that a Sub-Slab Depressurization System (SSDS) be installed at the site to provide a permanent solution “to prevent the VOCs from infiltrating into [the] building.”

According to the GEI report, an “active sub-slab depressurization system (SSDS)” was installed in the subject site (i.e. 103 Washington Street) in 2007, which consisted of the installation of sub-slab vapor extraction points and PVC piping connected to an electric fan located outside of the building. In the most recent round of testing on November 9, 2016, the active SSDS system was shut down and the indoor air and sub-slab soil vapor were tested. “PCE was detected at concentrations of 1.5 micrograms/cubic meter ($\mu\text{g}/\text{m}^3$) in the office space and 1.8 $\mu\text{g}/\text{m}^3$ in the garage space,” which are both “below the TV’s (threshold values) for commercial/industrial indoor air.” However, beneath the building slab “PCE was detected at 1,210 $\mu\text{g}/\text{m}^3$ and TCE was detected at 24 $\mu\text{g}/\text{m}^3$ ”, which for PCE “is greater than the MassDEP commercial/industrial soil vapor screening level.

The most recent report for RTN 3-23246 referencing the property at 103 Washington Street is a “Phase V Status Report No. 12 and Remedial Monitoring Report No. 27” dated August 2, 2017, prepared by GEI. According to this report, “the property located at 103 Washington Street is being redeveloped into commercial and residential space by KRE Company” and that “based on communications with KRE Company, the building is now vacant and will remain vacant until demolition and construction of the new building”. Therefore, GEI noted that “since the building is not occupied, there is not a complete vapor intrusion pathway”, and accordingly, “GEI observed the removal of the SSDS fans and remote telemetry system at the building on May 31, 2017.” GEI stated that they are communicating with KRE Company concerning potential vapor mitigation controls that may be incorporated into the new building construction, if necessary.

A “Disposal Site Map and Site Boundary” plan contained in GEI’s August 2, 2017 submittal depicts monitoring wells IES-1, IES-2, IES-4, IES-5, and IES-6 at the subject site. This map and also depicts the subject property at 103 Washington Street as being within the “Disposal Site Boundary” for RTN 3-23246; within the “extent of PCE concentration in shallow groundwater greater than or equal to 50 $\mu\text{g}/\text{l}$ ”; and also within the “extent of PCE concentration in shallow groundwater greater than or equal to 20 $\mu\text{g}/\text{l}$ ”.



More recent reports regarding RTN 3-23246 include a “Partial Permanent Solution Statement for 0 Franklin Street, Somerville, Massachusetts”, dated September 21, 2017; a “Partial Permanent Solution Statement for 86 Franklin Street, Somerville, Massachusetts”, dated October 26, 2017; and a “Partial Permanent Solution Statement for 51-51A Tufts Street, Somerville, Massachusetts” dated November 21, 2017, all prepared by GEI. Each of these reports contain a regional site plan, which indicates that the subject site at 103 Washington Street is located within the “Disposal Site Boundary” of RTN 3-23246; and is also located within the “extent of PCE concentration in shallow groundwater greater than or equal to 50 µg/l.”

July 17, 2013 “Limited Subsurface Investigation” (99 Franklin Street)

According to a “Limited Subsurface Investigation” report conducted at the northerly abutting property at 99 Franklin Street by Harvey Associates of Hingham, MA, two soil borings (B-1 and B-2) were advanced along southern edge of that property, immediately adjacent to the northern property line of the subject site at 103 Washington Street. The purpose of Harvey’s investigation was “to evaluate potential subsurface impacts” caused by buried gasoline tanks and historical usage of the subject site (103 Washington Street). According to this report, B-1 and B-2 were completed on the southwest and southeast sides of the site, respectively, to a depth of 20 feet below ground surface (bgs). Soil samples collected from the surface to the total depth of each boring were screened for organic vapors in the field using a photoionization detector (PID); no organic vapors were detected in any of the five soil samples screened from each boring. In addition, one soil sample from B-2, collected from the estimated water table (at 15 feet bgs), was laboratory analyzed for VPH and EPH. “Low concentrations of aromatic and aliphatic hydrocarbons were detected,” but at concentrations “well below any action levels.”

According to the Harvey report, borings B-1 and B-2 were completed as groundwater monitoring wells (MW-1 and MW-2, respectively). The water table in MW-1 was measured at 12 feet below ground surface (bgs), and MW-2 was “dry;” a condition attributed by Harvey to low permeability, “greenish blue clay” encountered in both wells from approximately 2 feet bgs to 20 feet bgs. Groundwater samples collected from MW-1 were laboratory tested for VPH and EPH compounds, and the results of this groundwater testing revealed “no aromatic or aliphatic compounds above laboratory detection limits.”

As such, Harvey concluded that based on laboratory testing, 99 Franklin Street “does not appear to have any subsurface impacts to soil and/or groundwater from potential petroleum contaminants typically associated with the current and historical use of” the property at 103 Washington Street. Harvey also concluded that 99 Franklin Street lies topographically above (upgradient of) the subject site, and the “dense clay” substrate “likely impedes contaminant migration” northward from 103 Washington Street. Therefore, based on these findings, Harvey concluded that petroleum hydrocarbons (as measured by VPH and EPH testing) are not likely to be migrating across the property line between 99 Franklin Street and 103 Washington Street.

March 24, 2017 “Phase 1 Environmental Site Assessment”

At the time of IES’s March 2017 “Phase 1 Environmental Site Assessment”, the existing building at the site was vacant and was last utilized as an automobile repair shop (County Auto Repair).

Recognized Environmental Conditions (RECs) identified at the site at that time included the former on-site presence of a gasoline filling station for approximately 57 years (1930 to 1987), an automobile repair shop on-site for approximately 61 years (1956 to 2017), and discrepancies in City records concerning “registered” and “removed” on-site USTs (i.e. there are possibly two, unaccounted, 4,000-gallon gasoline USTs, and another discarded tank). In addition, the site is contaminated by chlorinated solvents extending from a documented release at a State Disposal Site (RTN 3-23246), located at 50 Tufts Street.

In addition to the aforementioned REC’s, Potential Environmental Conditions (PECs) identified at the site during the Phase 1 investigation included two, 55-gallon drums for waste oil, a 250-gallon AST for virgin motor oil, a 55-gallon drum used for cleaning automobile parts, a 275-gallon AST for fuel oil, a fuel oil supply line that passes under the concrete slab, and a possible floor drain in a repair bay that had been sealed. In addition, the site is identified as a RCRA Generator of Hazardous Waste (ID# MV6176283600).

Finally, off-site PEC’s identified during the March 2017 Phase 1 assessment were limited to the upgradient property at 50 Tufts Street, which in addition to contaminating the subject site with chlorinated solvents, is also identified as a Registered UST Facility (ID #10866), and a RCRA Generator of Hazardous Waste (MAC30001127 and MAD000844969).

April 24, 2017 “Subsurface Investigation”

A subsurface investigation was conducted at the site by IES in April of 2017, which consisted of the advancement of six (6) on-site test borings (IES-1 through IES-6), with monitoring wells installed in five of the six borings (IES-1, IES-2 and IES-4 to IES-6). In addition, a 1” diameter, hand-driven soil auger was advanced to 5 to 6 feet below grade at three locations in the east side parking lot, to search for the two “proposed, 4,000 gallon USTs” identified on an undated site plan discovered in City of Somerville Fire Prevention Office files. No underground tanks were discovered by the probes, suggesting that the USTs had been removed, or were never installed. The locations of these borings, monitoring wells, and test probes are shown in Figure 2 in **Attachment “A”** of this report.

The test borings were advanced by TDS, Inc. of Sterling, MA using a “6610 geoprobe” tracked vehicle, which employs direct push percussion technology to advance the drill string (see **Attachment “C”** for Test Boring Logs). Continuous soil samples were collected in disposable plastic sleeves inserted into a 2” diameter, stainless-steel sampling tube, from the surface to 15.0 feet below grade. Representative soil samples from each interval were collected in the field and immediately placed into pre-cleaned, 8 oz. jars for headspace screening.

Test boring/monitoring well IES-1 was placed in the northeast corner of the east side parking lot, adjacent to Franklin Street and downgradient of three, former gasoline and waste oil

USTs located along the north property line. Soils encountered in the boring were dominated by wet gravel tainted with a gasoline odor and sheen, which is indicative of a tank grave. Test boring/monitoring well IES-2 was placed on the east side of the site, adjacent to Franklin Street and downgradient or cross gradient of the location of the two “proposed, 4,000 gallon USTs”. Soil encountered in the boring was dominated by dense, dry clay without noticeable odor or contamination.

Test boring B-3 was advanced in the center of the former filling station pump island, southeast of the site building, but encountered rock refusal at 2½’ below grade. The damp, sandy fill encountered in the boring was tainted with an apparent oil odor. Test boring/monitoring well IES-4 was advanced in the southeast corner of the parking lot, adjacent to the corner of Franklin and Washington Streets, and downgradient of the repair shop, former filling station pump island, and former tank grave. Soil encountered in the boring was dominated by dense, dry to damp clay, with a sandy clay layer at 13 to 15 feet below grade. The soil was tainted with a very strong gasoline odor.

Test boring/monitoring well IES-5 was advanced in the northwest corner of the site, upgradient of the site building and former tank grave. This well is situated closest to the DEP Disposal Site at 50 Tufts Street, which has impacted the subject site with chlorinated solvents. Soil in this boring was dominated by dry, dense clay containing a slight, unidentifiable odor. Finally, test boring/monitoring well IES-6 was installed in the center of the southwest repair bay inside the site building, adjacent to a former, in-ground, hydraulic lift. Soils were dominated by dense, dry, yellow clay with a few, thin sandy layers, and a slight, unidentifiable odor.

The soil samples obtained from the test-boring program were screened with a MiniRae Lite Photoionization Detector (PID) to detect the presence of Volatile Organic Compounds (VOC’s) in soil headspace. Soil sample screening results are summarized in Table 1 in **Attachment “B”**, and test boring/monitoring well locations are shown in Figure 3 in **Attachment “A”** of this submittal.

The results of the soil screening program revealed the presence of significantly elevated VOC concentrations in soil samples collected from test borings IES-1 (up to 235 ppmv) and IES-4 (up to 854 ppmv), likely due to their locations on the downgradient edges of the former tank grave. IES-2, also located on the eastern edge of the former tank grave, is notable for the lack of organic vapors, likely due to the impermeability of the dense clay surrounding the tank grave. Low concentrations of organic vapors (<10 ppmv) were detected in borings B-3, IES-5 and IES-6. Soil samples located close to, or above the perceived water table were submitted to Phoenix Environmental Laboratories, Inc. of Manchester, CT for laboratory analysis.

Soil samples IES-1/S-2 (5-10 feet) from a wet sand and gravel horizon, and IES-4/S-5 (10-15 feet) from a clay-rich horizon, were laboratory analyzed for Volatile Petroleum Hydrocarbons (VPH) and target Volatile Organic Compounds (VOC’s) to identify gasoline and associated compounds. Clay-rich soil sample IES-5/S-4 (10-15 feet) was laboratory analyzed for Volatile Organic Compounds (VOCs) via EPA 8260 in order to address the



chlorinated solvents known to impact the site from a plume originating from the DEP Disposal site at 50 Tufts Street (RTN 3-23246). Finally, soil sample IES-6/S-2 (5-10 feet) was laboratory analyzed for Extractable Petroleum Hydrocarbons (EPH) with target Polycyclic Aromatic Hydrocarbons (PAHs) in order to address compounds typically found in hydraulic oil, motor oil and urban fill.

The results of the soil testing program revealed the presence of elevated levels of C₅-C₈ Aliphatic Hydrocarbons (1,700 mg/kg), C₉-C₁₀ Aromatic Hydrocarbons (640 mg/kg), C₉-C₁₂ Aliphatic Hydrocarbons (1,900 mg/kg) and Naphthalene (5 mg/kg) in soil sample IES-4/S-5 above the applicable RCS-1 reportable concentrations of 100 mg/kg, 100 mg/kg, 1,700 mg/kg and 4 mg/kg, respectively.

The results of the soil testing program for soil sample IES-1/S-2 revealed elevated levels of the same VPH compounds as in IES-4, plus m,p-Xylenes, but all at concentrations below applicable RCS-1 reporting criteria. Likewise, two EPH compounds in IES-6/S-2, and three VOC's in IES-5/S-4 were detected at slightly elevated levels, but all below RCS-1 standards. It should be noted that two of the VOCs detected in IES-5 (PCE and TCE) were first detected at the site in sub-slab soil gas by GEI in 2007, and their presence at the site is linked to a documented release of similar compounds at the Disposal Site located at 50 Tufts Street (RTN 3-23246), and are not related to RTN 3-34310. Laboratory results of the soil testing program are summarized in Table 2 in **Attachment "B"** of this report.

As part of the April 2017 subsurface investigation, groundwater samples collected from the five newly installed monitoring wells (IES-1, IES-2, IES-4, IES-5 and IES-6). The wells were purged of at least six volumes of standing water, and until the suspended sediment cleared. The groundwater samples were collected utilizing a low flow/low stress peristaltic pump and preserved according to EPA guidelines published in 40 CMR 136. The groundwater samples were forwarded to Phoenix Environmental Laboratories, Inc. of Manchester, CT for laboratory analysis for VPH with target analytes at monitoring wells IES-1, IES-2 and IES-4; for EPH with target PAH's at monitoring wells IES-1 and IES-4; for dissolved RCRA8 Metals at monitoring well IES-1; and for VOC's via EPA Method 8260 at monitoring wells IES-1, IES-5 and IES-6.

The results of this testing program revealed the presence of elevated levels of Tetrachloroethene (0.2 mg/l) and Trichloroethene (0.046 mg/l) above the applicable reportable concentrations (RCGW-2) of 0.05 mg/l and 0.005 mg/l, respectively in groundwater monitoring well IES-5. However, this contamination has been delineated within the contaminant plume associated with RTN 3-23246 at 50 Tufts Street. Therefore, a Downgradient Property Status (DPS) submittal is not required, and the elevated levels of TCE and PCE in the groundwater considered a release which does not require reporting pursuant to 310 CMR 40.0317(16), since (a) "a response action is being undertaken in compliance with the provisions of 310 CMR 40.0000 to address such release"; (b) "a release notification was previously provided to the Department for the disposal site on which the release has been observed or documented"; and (c) "such presence of oil and/or hazardous material is consistent with the types, nature, exposure potential and quantities of oil and/or hazardous material for which that notification was provided to the Department". It is also

noted that since the site building is currently vacant, an Imminent Hazard (IH) condition has not been identified at the site.

In addition, as shown in Table 3 in **Attachment “B”**, slightly elevated levels of two other VOC’s (cis-1,2-Dichlorethene and MTBE) were detected in the laboratory analysis of the groundwater in IES-5; four VOC’s (Acetone, MEK, MTBE, and PCE) were detected in IES-6; VPH compounds and target VOC’s were detected in IES-4; several PAH’s were noted in IES-4; and Naphthalene, dissolved Barium, and dissolved Selenium were detected in groundwater samples obtained from monitoring well IES-1. However, it is noted that all of these detections were at concentrations below RCGW-2 reporting standards. Notable too was the lack of VPH and EPH compounds detected above laboratory testing equipment detection limits in IES-1 and IES-2, which are located in and adjacent to the former UST grave. Laboratory results and the Chain-of-Custody are included in **Attachment “D”** of this report.

September-October 2017 Release Abatement Measure (RAM):

Response actions conducted at the site were performed in accordance with a “Release Abatement Measure (RAM) Plan” dated June 5, 2017. As indicated in the RAM Plan and detailed in a “RAM Completion Statement” report submitted via eDEP concurrently with this report, the objective of the RAM was to reduce, or eliminate if possible, the gasoline (i.e. VPH) contamination present in the soil at the site. The cleanup goal was the applicable Method 1 S-1/GW-2/GW-3 standards, or background, if feasible. In order to achieve this objective, IES has proposed the excavation, and off-site disposal of up to 500 cubic yards of contaminated soil.

Excavation activities conducted as part of this RAM commenced on September 5, and continued on September 7, 8, 11, and 16 and October 17, 18, 19, and 23, 2017. The excavation was initiated at the southeastern corner of the site, where the highest levels of gasoline contamination had been identified during a previous subsurface investigation conducted by IES in April of 2017 (IES-4). The excavation was performed by Global Contracting Services, Inc. of Taunton, MA, under contract with Donadio Environmental Associates, Inc. (DEA) of Braintree, MA.

The excavation extended to a depth of approximately 10-12.5 feet below ground surface (bgs), and during the excavation, periodic soil sample screening was performed utilizing a MiniRae Lite Photoionization Detector (PID) to detect the presence of Volatile Organic Compounds (VOC’s) in soil headspace. The excavation proceeded outward in all directions until such time as no significantly elevated headspace readings were detected in the soil samples (<75 ppm) to the north, south, and east, and west. The excavation also was advanced downward until no significantly elevated headspace screening results were encountered, and it is noted that groundwater was not encountered during excavation activities.

Based on PID readings and the gasoline odor noted in the soil, it was determined that the gasoline release at the site originated at former pump island, where it was discovered at about 2-4 feet below ground surface (bgs) in the vicinity of the pump island and associated UST piping. From there it “coned out”, extending to greater depths further away from the source

area. The depth of contamination was greatest (approximately 12.5 feet bgs) near the corner of Washington Street and Franklin (IES-4) and became shallower towards the north.

At the completion of the excavation, a total of twelve (12) soil samples were obtained from the sidewalls and base of the excavation (SS-1 through SS-12), with the locations of the soil samples shown in **Attachment “A”**, Figure 4. The extent of the excavation was determined to the south by Washington Street (SS-1 and SS-5); to the east by Franklin Street (SS-3); to the north and west by low PID readings (SS-4, SS-6, SS-9, SS-10, and SS-11), and vertically to a depth of 10-12.5 feet (SS-2, SS-7, and SS-8). Further excavation to the south and east was not performed so as not to undermine the sidewalks along Washington and Franklin Streets; and the excavation did not extend deeper than 12.5 feet so as not to encounter groundwater.

From September 7 through 16, 2017 a total of 379.72 tons of gasoline-contaminated soil was initially excavated and stockpiled on and covered with polyethylene sheeting at the site. This stockpile was also covered with polyethylene sheeting. Due to the fact the limited area available to stockpile the excavated soil, it was decided to remove the existing soil stockpile from the site and live load the remaining soil to be excavated in accordance with the RAM Plan.

In order to determine disposal options for contaminated soil excavated at the site as part of this RAM, three composite soil samples (S-1, S-1A, and S-2A) were obtained from the soil stockpile and the westerly sidewall of the excavation, in order to live load the remaining in-situ gasoline contaminated soil in accordance with the aforementioned RAM Plan. These samples were submitted to Phoenix Environmental Laboratories, Inc. of Manchester, CT to be characterized for disposal. The composite samples were comprised of a total of up to eight soil sampling locations from both the soil stock pile (i.e. excavated soil) and the western sidewall of the excavation, where further excavation was to continue.

The composite soil characterization samples were tested by Phoenix Environmental Laboratories, Inc. of Manchester, CT for VOC's via EPA Method 8260; Total Petroleum Hydrocarbons (TPH) via EPA Method 8100; PCBs via EPA Method 8081; Arsenic, Cadmium, Chromium, Lead, and Mercury; Toxicity Characteristic Leaching Procedure (TCLP) for Lead; and Corrosivity. In addition, the composite soil characterization sample was also analyzed for Flash Point, Ignitability, pH, Reactivity Cyanide, Reactivity Sulfide, and Reactivity.

The results of the soil characterization program were submitted Environmental Soil Management, Inc. (ESMI) of Loudon, NH for approval (see Table 5 in **Attachment “B”** for soil characterization testing results and **Attachment “D”** for laboratory reports). Upon approval from ESMI, the contaminated soil generated as part of the RAM for RTN 3-34310 at 103 Washington Street, Somerville, MA was transported to their facility in Loudon, NH on October 16, 2017 (four loads), October 17, 2017 (two loads) and October 23, 2017 (six loads). The soil was transported by Mystic Motor Trans, Inc. under a Bill of Lading (BOL) in accordance with the MCP provisions of the aforementioned RAM Plan (see **Attachment “E”** for Soil Disposal Documentation).

In order to determine if the contaminated soil (above MCP Method 1 S-1/GW-2 and S-1/GW-3) standards had been removed, eight of the twelve soil samples obtained from the base of the sidewalls of the excavation (SS-1 through SS-7 and SS-9) were forwarded to Phoenix Analytical Laboratories, Inc. in Manchester, MA for testing for Volatile Petroleum Hydrocarbons (VPH) with target Volatile Organic Compounds (VOC's). Due to low headspace screening results, soil samples SS-8 (4 ppmv) and SS-10 through SS-12 (0 ppmv) were not submitted for laboratory analysis.

As shown in Tables 4 and 4A in **Attachment "B"** of this submittal, no VPH compounds or target analytes were detected above laboratory quantitation limits in any of the post-RAM excavation confirmatory samples tested.

In summary, the RAM conducted at 103 Washington Street for RTN 3-34310 consisted of the excavation of a total of 379.72 tons of gasoline contaminated soil, which was disposed of at the EMSI facility in Loudon, NH. Confirmatory testing of sidewall and bottom samples of soil remaining after the completion of the RAM excavation activities indicated that no VPH compounds or target VOC's were detected, above laboratory quantitation limits, in any of the samples tested. Therefore, the objectives of the RAM, as stated in the June 5, 2017 RAM Plan, have been met.

Finally, it is noted that no dewatering was performed during the RAM excavation activities (groundwater was not encountered), and also that in accordance with National Ambient Air Quality Standards (NAAQS), no visible dust crossed the property boundary during excavation activities.

SECTION 4

Site Geology & Hydrology

The actual bedrock geology at the site was not identified during this investigation. However, according to the "Bedrock Geologic Map of Massachusetts" (Zen, 1983), the underlying bedrock in the area of the site is identified as the Cambridge Argillite (Proterozoic Z to earliest Paleozoic), which consists of gray argillite and minor quartzite; rare sandstone and conglomerate; and contains acritarchs.

The surficial geology of the site was observed during the test boring program performed by IES in April of 2017. The geology at IES-1 dominated by wet gravel tainted with a gasoline odor and sheen, which is indicative of a tank grave; while the geology at IES-2 was dominated by dense, dry clay. Test boring IES-3 encountered refusal at 2½ feet below grade, and the geology at this location consisted of sandy fill material; while soil encountered at boring IES-4 was dominated by dense, dry to damp clay, with a sandy clay layer at 13 to 15 feet below grade. At test boring IES-5, the soil in was dominated by dry, dense clay containing a slight, unidentifiable odor; and at IES-6, soils were dominated by dense, dry, yellow clay with a few, thin sandy layers.

Additional observations during the RAM excavation revealed that the upper soils consisted of Urban Fill at least to an approximate depth of 5-6 feet below ground surface, consisting of concrete, brick, etc. in the area near the pump island.

Test boring logs providing additional details regarding the geology of the site encountered at each of the six test borings advanced at the site are included in **Attachment "C"** of this report.

It is noted that since a reportable release of gasoline to the groundwater was not encountered for RTN 3-34310, a groundwater flow survey was not conducted as part of this Permanent Solution submittal. However, groundwater flow in the area has been determined as part of response actions conducted for RTN 3-23246 and the contaminant plume associated with that release is migrating to the east-southeast.

SECTION 5

Sensitive Receptors

No potable wells exist on site and there are no private potable wells known to exist within at least 500 feet of the site. The site location is not within a DEP approved Zone II ground water recharge area or potentially productive aquifer. Properties in the vicinity of the site are serviced by municipal water. Sensitive off-site receptors include residential properties located within 500 feet of the site; and the “Michael E. Capuano Early Childhood Center” at 150 Glen Street, which is located approximately 225 feet to the north and upgradient of the subject site.

Under the MCP, all groundwater is designated as having the potential to impact surface water and therefore MCP GW-3 standards apply to the site. The depth to the water table at the site is approximately 13 feet below grade and therefore MCP GW-2 Standards apply to site groundwater within 30 feet of the existing site building and within 30 feet of any future site buildings.

The nearest body of surface water is Boston Harbor, which is located approximately 0.9 miles to the east of the subject site.

According to a MassDEP “Phase 1 Site Assessment Map” (see **Attachment “A”**), the subject site is not located within a Medium Yield, High Yield, or EPA Sole Source Aquifer. In addition, the site is not located in a Zone II, IWPA, or Zone A; and no wetlands, rare wetland wildlife habitats, vernal pools, or other sensitive receptors are present at the site. In addition, other than the nearby “Michael E. Capuano Early Childhood Center”, there were no items on the “Phase 1 Site Assessment Map” identified within 500 feet of the subject site.

Soil Categories

Although the site building is currently vacant, due to the foreseeable future use of the site for residential purposes, the Frequency of Use for children is “High” and for adults is also “High”. In addition to the existing building, the remainder of the property at 103 Washington Street (Disposal Site) is currently unpaved (due to the recent RAM excavation) or covered with asphalt. However, future development plans call for the commercial/residential development of the site. The “Disposal Site” associated with RTN 3-34310 is located on the southern portion of the 0.13-acre property at 103 Washington Street and will be either covered with the proposed site building or paved parking/driveway area, thus preventing the potential to disturb soil and averting direct contact with the contaminated soil or inhalation of contaminated soil derived dust, and will not be used for gardening, digging, and/or recreational sports. Therefore, the Intensity of Use is “Low”. The soil at the site is covered with asphalt pavement and/or the site building, thus preventing accessibility of the soil, therefore the site soil is characterized as “Potentially Accessible”. Based on Table 40.0933(9) “Soil Category Selection Matrix - Human Exposure Potential” the soil is characterized as Category S-2. However, in order to be conservative, soil testing results summarized in Tables 4 and 4A in **Attachment “B”** are compared to S-1 standards.

Groundwater Categories

Pursuant to 310 CMR 40.0932(4), the groundwater is not categorized as GW-1, as the subject site is NOT:

- a. Within a Current Drinking Water Source Area
- b. Within a Potential Drinking Water Source Area

According to 310 CMR 40.0006, a Current Drinking Water Source Area is defined as groundwater located: (a) within the Zone II for a public water supply; (b) within the Interim Wellhead Protection Area for a public water supply; (c) within the Zone A of a Class A surface water body used as a public water supply; or (d) within 500 feet of a private water supply well. A Potential Drinking Water Source Areas is defined as groundwater located: (a) 500 feet or more from a public water supply distribution pipeline; (b) within an area designated by a municipality specifically for the protection of groundwater quality to ensure its availability for use as a source of potable water supply; or (c) within a Potentially Productive Aquifer that has not been excluded as a Non-Potential Drinking Water Source Area, as defined by the MCP.

According to 310 CMR 40.0932(6), “groundwater shall be defined to be in category GW-2 if it is located within 30 feet of an existing occupied building or structure, and the average annual depth to groundwater in that area is 15 feet or less”. Groundwater has been measured at a depth of less than 15 feet at the site, and as such, the groundwater within 30 feet of the existing on-site structure and any future structures is considered GW-2.

Finally, under the MCP, all groundwater is designated as having the potential to impact surface water and therefore MCP GW-3 standards apply to the site.

SECTION 6

Conceptual Site Model

40.1056(2): Conceptual Site Model

- (a) *A clear and accurate description of the location of the site or the location and boundaries of the disposal site.*

The location of the site is shown on the USGS Boston North Topographic Map (Figure 1 in **Attachment “A”**) and the City of Somerville Assessor’s Map (Figure 2 in **Attachment “A”**). In addition, site features, including a graphical depiction of the Disposal Site boundaries associated with RTN 3-34310 are depicted in Figures 3 and 4 in **Attachment “A”**.

The “Disposal Site” associated with this “Permanent Solution” submittal for RTN 3-34310 includes the southeastern portion of the property at 103 Washington Street (Somerville Assessor’s ID #104-A-60). The gasoline contamination in the soil is attributed to leaks and/or spills at the pump island associated with the former gasoline filling station, which operated at the site from the 1930’s to 1987; and a reportable release of gasoline to the groundwater was not identified. Soil and groundwater testing has indicated that the former gasoline UST’s were not the source of the contamination.

The “Disposal Site” (i.e. area of soil contamination) occupies approximately 30 percent of the 0.13-acre area of the property comprising 103 Washington Street, with VPH and Naphthalene contamination at or above Reportable Concentrations (RCS-1) and MCP Method 1 S/1GW-2 and S-1/GW-3 Standards detected in test boring IES-4. It is noted laboratory testing of groundwater samples collected from five monitoring wells installed at the 0.13-acre site did not identify a reportable release of gasoline to the groundwater associated with RTN 3-34310.

Therefore, the boundaries of the disposal site are limited to the southern and southeastern portions of the subject property at 103 Washington Street, apparently originating from incidental spillage and or piping leaks associated with the pump island at a former gasoline station, which ceased operations in 1987.

It is noted that in addition to the gasoline contamination associated with RTN 3-34310 and this Permanent Solution Statement, elevated levels of Tetrachloroethylene (0.2 mg/l) and Trichloroethylene (0.046 mg/l), above the applicable Reportable Concentrations of 0.05 mg/l and 0.005 mg/l, respectively, were previously identified at the site. However, this release has been delineated within the contaminant plume associated with RTN 3-23246 at 50 Tufts Street, and is being addressed via Response Actions conducted by others under RTN 3-23246

(b) A succinct summary of the Conceptual Site Model.

For an accurate description of the Disposal Site, including site history, release history and site observation, a Conceptual Site Model (CSM) approach has been utilized. A CSM is a basic description of how contaminants enter a system, how they are transported within the system (or redistributed within the system) and where routes of exposure to humans and organisms occur.

Reportable concentrations of gasoline-related contaminants (C₅-C₈ Aliphatics, C₉-C₁₀ Aromatics, C₉-C₁₂ Aliphatics, and Naphthalene) were detected in the soil at the site, and a reportable release of gasoline to the groundwater was not identified regarding RTN 3-34310. The CSM was conducted under the guidance of DEP Policy #WSC-16-435 and was performed in order to identify the Potential Sources of OHM, including locations and specific OHM used or released at the site; determine the nature and extent of OHM impacts; evaluate known or suspected migration pathways; determine concentrations and distribution of VOC's in soil, groundwater, soil gas, indoor air, and outdoor air, to the extent known; and address potential indoor air receptors.

The "Disposal Site" associated with the Permanent Solution for RTN 3-34310 includes the presence of elevated levels of gasoline-related Volatile Petroleum Hydrocarbons (VPH) and target VOC's (including a reportable concentration of Naphthalene) in the soil. It is noted that a reportable release of gasoline to the groundwater was not identified for RTN 3-34310.

Using a CSM approach, based on the extent of the soil contamination observed during the initial subsurface investigation conducted in April of 2017 and the subsequent RAM excavation activities conducted in September and October of 2017, it is theorized that the source of the gasoline contamination in the soil at the site associated with RTN 3-34310 is attributed to incidental spillage and/or underground piping leaks in the vicinity of the pump island associated with the former gasoline station at the site, which operated from the 1930's through 1987.

Specifically, based on PID readings and the gasoline odor noted in the soil, and further supported by laboratory testing of soil samples, it appears that the gasoline release at the site originated at former pump island, where it was discovered at about 2-4 feet below ground surface (bgs) in the general vicinity of the pump island and associated UST piping. From there it "coned out", extending to greater depths further away from this suspect source. The depth of contamination was greatest (approximately 12.5 feet bgs) near the corner of Washington Street and Franklin (IES-4) and became shallower towards the north.

The absence of any indication of a reportable release in the soil and/or groundwater at test borings/monitoring wells IES-1 and IES-2 and at the northerly abutting property at 99 Franklin Street indicated that the former gasoline UST's at the site were not the source of the release.

- (c) *A demonstration that all Sources of OHM Contamination have been eliminated or controlled, to the extent feasible as specified in 310 CMR 40.1003(5)(a) and (c);*

With regard to the release associated with RTN 3-34310, pursuant to 310 CMR 40.1003(5)(a) and (c) it is noted that the gasoline station at the site ceased operations in 1987. Following the removal of the storage tanks in 1987, gasoline sales at the site ceased, and the site was used exclusively for automobile repair operations (County Auto Repair), which vacated the premises in early 2017. The limited gasoline contamination present in the soil and the absence of a reportable release of gasoline to the groundwater is indicative of incidental spillage and underground piping leaks in the vicinity of the former pump island of the former gasoline station, which has not been in operation for 30 years.

According to City of Somerville records, in April 1931, a “Certificate of Registration” was issued by the Commonwealth of Massachusetts for the storage of an unknown quantity of flammable liquids at the site. As shown on the 1933 Sanborn Atlas, the site was occupied by a “filling station” with three “gasoline tanks,” located along the north property line adjacent to Franklin Street.

In February of 1958, Somerville Fire Department records document that a 1,000-gallon gasoline tank was removed from “Beucler Gasoline Station.” In May 1962, the Commonwealth of Massachusetts Department of Public Safety - Division of Fire Prevention issued to “Aquino Auto Sales & Services, Inc.” at 103 Washington Street, a registration for “10,000 gallons of gasoline, 1,000 gallons of waste oil, 110 gallons of fuel oil, 20 gallons of alcohol, 50 gallons of motor oil, 8 gallons of grease, and 100 gallons of anti-freeze alcohol.” Further details about the expanded gasoline storage capacity at the site are limited to an undated plan in Fire Department files showing the proposed locations for the installation of two 4,000 gallon USTs, east of the site building. Later, in September 1962, Fire Department records indicate a “1,000 gallon, empty gasoline tank” was removed from the site.

In 1985, a Fire Prevention Office inventory of underground storage tanks at “Aquino Auto Sales & Services, Inc.” listed the presence of four, on-site, steel tanks, including 3,000-gallon and 2,000-gallon USTs containing gasoline, a 1,000-gallon UST containing waste oil, and a 275-gallon AST containing fuel oil. In May of 1987, Fire Prevention Office documents show that these tanks were excavated and removed from the site, although it should be noted that neither a UST Closure Report nor a “receipt of disposal” for the tanks was discovered in City files. Similarly, the City of Somerville Bureau of Fire Prevention and Investigations stated in a letter dated June 1987, that the tank removal contractor (L&M Construction) “returned one (1) of the four (4) tanks [L&M excavated] to its original location in Somerville, and just dumped same into the excavation pit.” However, additional investigations conducted by IES confirmed that all of the former UST’s and associated piping and dispensers have been removed, thereby eliminating the source of the contamination.

RAM excavation activities conducted by IES in September and October of 2017 confirmed that there is no continuing source of the release. Therefore, the removal of the gasoline UST's and associated piping and dispensers along with the ceasing of the selling of gasoline at the site 30 years ago has eliminated the source of the OHM contamination, to the extent feasible.

- (d) *A demonstration that response actions have been taken to adequately assess and control the subsurface migration of OHM remaining at the disposal site as specified in 310 CMR 40.1003(6)(a);*

Pursuant to 310 CMR 40.1003(6)(a) a Permanent Solution shall not be achieved unless and until response actions are taken to adequately assess and control the subsurface migration of OHM remaining at a disposal site. Such response actions shall ensure “for a Permanent Solution, plumes of dissolved OHM in groundwater and vapor-phase OHM in the Vadose Zone are stable or contracting”.

Groundwater samples were collected from the five installed monitoring wells (IES-1, IES-2, IES-4, IES-5 and IES-6) installed at the 0.13-acre subject site by IES in April of 2017. The groundwater samples were collected utilizing a low flow/low stress peristaltic pump and preserved according to EPA guidelines published in 40 CMR 136 and submitted to Phoenix Environmental Laboratories, Inc. of Manchester, CT for laboratory analysis for VPH with target VOC's (IES-1, IES-2 and IES-4); EPH with target PAH's (IES-1 and IES-4), Dissolved RCRA 8 Metals (IES-1); and VOC's via EPA Method 8260 (IES-1, IES-5 and IES-6).

As shown in Table 3 in **Attachment “B”**, the results of the groundwater testing program revealed the presence of low levels of VPH compounds and target VOC's (BTEX) in the groundwater at IES-4, at levels well below the applicable Reportable Concentrations (RCGW, elevated levels of the VOCs Tetrachloroethene (0.2 mg/l) and Trichloroethene (0.046 mg/l) were identified above the applicable MCP Method 1 GW-2 Standards and RCGW-2 Reportable Concentrations of 0.05 mg/l and 0.005 mg/l, respectively in groundwater monitoring well IES-5. However, as previously noted, this contamination has been delineated within the contaminant plume associated with RTN 3-23246 at 50 Tufts Street.

With regard to soil following the excavation of a total of 379.72 tons of gasoline-contaminated soil as part of a RAM, a total of twelve (12) confirmatory sidewall and bottom samples were obtained from the RAM excavation for headspace screening for VOC's. Eight of the twelve confirmatory samples were submitted for laboratory analysis for Volatile Petroleum Hydrocarbons (VPH) with target VOC's. The results of these testing programs did not reveal the presence of any VPH compounds or target VOC's above the applicable MCP Method 1 S-1/GW-2 or S-1/GW-3 standards in any of the samples tested.

- (e) *Where NAPL is or has been present, a demonstration that response actions have been taken to adequately assess NAPL mobility and meet the requirements of 310 CMR 40.1003(7)(b);*

NAPL has never been detected at this Disposal Site, and as previously discussed, a reportable release of gasoline to the groundwater has not been identified for RTN 3-34310.

- (f) *Information supporting the conclusion that a level of No Significant Risk has been achieved or exists;*

Pursuant to 310 CMR 40.0006, a condition of “No Significant Risk” is defined as “a level of control of each identified substance of concern at a site or in the surrounding environment such that no such substance of concern shall present a significant risk of harm to health, safety, public welfare or the environment during any foreseeable period of time”.

A “Method 1 Risk Characterization” was completed by IES, Inc. in support of this Permanent Solution Statement (see **Attachment “F”**). The Risk Characterization identified Human and Environmental Receptors; and included an Evaluation of Risk of Harm to Safety, the Environment, and Public Health and Welfare; along with an Imminent Hazard Evaluation.

Pursuant to 310 CMR 40.0971(1), “Method 1 may be used to characterize the risk of harm to health, public welfare and the environment at disposal sites where assessments conducted in accordance with 310 CMR 40.0000 have determined that the presence of oil and/or hazardous material is limited to soil and/or groundwater. This is the case regarding the gasoline contamination identified at the Disposal Site associated with RTN 3-34310, and as such a Method 1 Risk Characterization is applicable to this Disposal Site.

According to the Risk Characterization the levels of contamination in the soil and groundwater at the site are present below the applicable MCP Method 1 Standards (S-1 for soil and GW-3 and/or GW-2 for groundwater). Therefore, in accordance with 310 CMR 40.0973(7), a condition of “No Significant Risk” of harm to health, public welfare, and the environment has been achieved for the soil and groundwater, and as such, a Permanent Solution Statement is applicable for the subject site.

The Method 1 Risk Characterization also included “Characterization to Risk of Safety”, which was characterized based on the data collected pursuant to the response actions being performed at the site, receptor, and exposure information, as identified in 310 CMR 40.0904 through 40.0933. This portion of the Risk Characterization concluded that pursuant to 310 CMR 40.0960(3), a level of “no significant risk to safety” exists at the site due to the absence of (a) rusted or corroded drums or containers, open pits, lagoons, or other dangerous structures; (b) any threat of fire or explosion, including the presence of explosive vapors resulting from a release of oil and/or hazardous material; and (c) any

uncontained materials which exhibit the characteristics of corrosivity, reactivity, or flammability described in 310 CMR 40.0347.

Finally, an “Imminent Hazard Evaluation” (IHE) was conducted as part of the MCP Method 1 Risk Characterization as required by 310 CMR 40.0953, which concluded that an Imminent Hazard is not present at the subject site at this time. This conclusion was based on the preponderance of the evidence that the release conditions specified in 310 CMR 40.0321(2) and/or 40.0321(3) do not constitute an actual Imminent Hazard to human health in conformance with the Imminent Hazard Evaluation process described in 310 CMR 40.0953, and in consideration of the site-specific factors and risk assessment and risk management criteria contained in 310 CMR 40.0950.

In summary, the documentation of this Risk Characterization has affirmed and documented the applicability of Method 1 to the disposal site pursuant to 310 CMR 40.0971(4).

Finally, it is noted that RTN 3-23246 is considered a separate release (different contaminants originating from an off-site source), which is currently being addressed by others, and was not evaluated in this Method 1 Risk Characterization associated with the corresponding Permanent Solution Statement for RTN 3-34310. With regard to RTN 3-23246, IES recommends reactivating the SSDS should the building become occupied; and that further evaluation is warranted, should the site be redeveloped including change in use.

- (g) *Information documenting the extent to which levels of oil and/or hazardous material in the environment have been reduced to Background, and/or the results of the feasibility evaluation conducted pursuant to 310 CMR 40.0860 demonstrating that the achievement of Background is not feasible;*

Due to the low levels of EPH/VPH and target analyte contamination in soil and groundwater, a feasibility evaluation conducted pursuant to 310 CMR 40.0860, which has concluded that “the achievement of Background is not feasible”.

With regard to soil, it is noted that following the excavation and removal of 379.72 tons of gasoline contaminated soil as part of a RAM, no contaminants associated with RTN 3-34310 (i.e. gasoline constituents) were not detected above the applicable MCP Method 1 S-1/GW-2 and S-1/GW-3 Standards in any of the confirmatory sidewall or bottom samples tested. It is noted that VPH compounds were previously detected above RCS-1 Standards in soil samples collected from boring IES-4, however, the contaminated soil in this area has been removed as part of the RAM.

With regard to groundwater testing, Contaminants of Concern (COC's) associated with RTN 3-34310 included C₅-C₈ Aliphatics (0.92 mg/l), C₉-C₁₀ Aromatics (0.84 mg/l), C₉-C₁₂ Aliphatics (1.3 mg/l), Benzene (0.012 mg/l), Ethylbenzene (0.063 mg/l), Xylenes (0.0588 mg/l), Naphthalene (0.069 mg/l), and Toluene (0.0043 mg/l) detected in 1 of 5 monitoring wells tested (IES-4); and Methyl-tert-butyl-ether (up to 0.0098 mg/l) detected in 2 of 5

wells tested (IES-5 and IES-6). However, as shown in Table 3 in **Attachment “B”**, all COC’s detected are well below the applicable GW-2 and GW-3 standards for each of the contaminants detected.

As previously noted, elevated levels of Tetrachloroethylene (0.2 mg/l) and Trichloroethylene (0.046 mg/l), above the applicable Reportable Concentrations of 0.05 mg/l and 0.005 mg/l, respectively, were previously identified in groundwater at the site. However, this release has been delineated within the contaminant plume associated with RTN 3-23246 at 50 Tufts Street, and is being addressed via Response Actions conducted under RTN 3-23246. As such, TCE and PCE are not considered Contaminants of Concern regarding the gasoline release associated with RTN 3-34310.

While a Permanent Solution is appropriate for this site, background levels have not been reached. In such cases, 310 CMR 40.0860 requires a determination regarding the feasibility of going beyond No Significant Risk to achieve or approach background. DEP has released a Final Policy entitled “Conducting Feasibility Evaluations under the MCP,” #WSC-04-160 (July 16, 2004), which specifically addresses this subject. DEP’s Final Policy provides guidance to LSPs in conducting the required Feasibility Assessment by presuming that all sites fall into one of three categories:

1. Sites where conditions exist that are stipulated to be “categorically feasible” to achieve or approach background;
2. Sites where conditions exist that are stipulated to be “categorically infeasible” to achieve or approach background; and
3. All other circumstances. For conditions (1) and (2), a site-specific feasibility evaluation is considered unnecessary.

In these cases, DEP has already stipulated that given site conditions, achieving or approaching background is either “feasible” or “infeasible.” For all other circumstances, a site-specific feasibility analysis must be completed.

To determine if it is “feasible” to achieve or approach background conditions, 310 CMR 40.1020 requires that an analysis be conducted to determine (among others) whether the benefits of the remedial actions to achieve or approach background justify the costs associated with those actions. The Final Policy contains guidance as to when the additional costs to attempt to reach background exceed the benefits. In general, if incremental (additional) costs to reach background conditions are less than 20 percent of expenditures to reach No Significant Risk, there is a presumption that achieving or approaching background is considered feasible. The conditions of categorical infeasibility include: 1) Excavation under permanent structures; 2) Remediation that will substantially affect public service or affect public safety; 3) Remediation of Degradable (Non-persistent) Contaminants; and 4) Remediation of Persistent Compounds in S-2 and S-3 soils.

The site does not meet the criteria for categorical infeasibility. There are residual concentrations of VPH compounds and gasoline-related VOC’s in groundwater.



However, it is noted that no VPH compounds or target Analytes were detected above or even approaching the GW-2 or GW-3 Standards at the site under existing conditions or in the foreseeable future.

Remediation of the VPH compounds and gasoline-related VOC's in groundwater at the site would likely ultimately prove to be ineffective, and costly. Therefore, it is not considered feasible to remediate soil and/or groundwater to background at the site, as costs would far exceed 20% of the costs of achieving NSR. As a result, it is concluded that pursuant to 310 CMR 40.0860(7)(a), the incremental cost of conducting the Comprehensive Remedial Alternative or other response action" necessary to reduce contaminant levels to background "is substantial and disproportionate to the incremental benefit of risk reduction, environmental restoration, and monetary and non-pecuniary values".

Finally, no other Permanent or Temporary Solution Statements have been filed for this Disposal Site or for any other Disposal Site at the property at 103 Washington Street. However, the contaminant plume associated with RTN 3-23246 at 50 Tufts Street has extended to the subject site at 103 Washington Street. According to a "Phase V Status Report No. 12 and Remedial Monitoring Report No. 27" dated August 2, 2017, prepared by GEI, "the property located at 103 Washington Street is being redeveloped into commercial and residential space by KRE Company" and that "based on communications with KRE Company, the building is now vacant and will remain vacant until demolition and construction of the new building". Therefore, GEI noted that "since the building is not occupied, there is not a complete vapor intrusion pathway", and accordingly, "GEI observed the removal of the SSDS fans and remote telemetry system at the building on May 31, 2017." GEI stated that they are communicating with KRE Company concerning potential vapor mitigation controls that may be incorporated into the new building construction, if necessary.

- (h) *A copy of any and all Activity and Use Limitations which have been implemented under 310 CMR 40.1070;*

Not applicable at this Disposal Site.

- (i) *For Permanent Solutions with Conditions where concentrations in Soil exceed Upper Concentration Limits in Soil at a depth greater than 15 feet from the ground surface or in an area beneath an engineered barrier, the results of the evaluation conducted pursuant to 310 CMR 40.0860 demonstrating that the achievement of Upper Concentration Limits in Soil located at a depth greater than 15 feet from the ground surface or in the area beneath an engineered barrier is not feasible;*

At the Disposal Site at 103 Washington Street in Somerville (RTN 3-34310), no contaminants are present in the soil that exceed the Upper Concentration Limits (UCL's). Therefore, an evaluation conducted pursuant to 310 CMR 40.0860 is not applicable at this Disposal Site.

- (j) *For a Permanent Solution with Conditions based upon assumptions about the current or future site activities, uses or conditions that do not require an Activity and Use Limitation pursuant to 310 CMR 40.1013, documentation related to such assumptions and conditions;*

Not applicable for this Disposal Site.

- (k) *A Data Usability Assessment documenting that the data relied upon is scientifically valid and defensible, and of a sufficient level of precision, accuracy, and completeness to support the Permanent Solution, and a Data Representativeness Evaluation, documenting the adequacy of the spatial and temporal data sets to support the Permanent Solution;*

In accordance with 310 CMR 40.1056(2)(k), IES, Inc. performed a Data Usability Assessment and a Representativeness Evaluation for this Permanent Solution. The analytical component is used to evaluate whether analytical data points are scientifically valid and defensible, and have a sufficient level of precision, accuracy, and sensitivity. Analytical data that meets all of the requirements of the MassDEP's Compendium of Analytical Methods (i.e. CAM Compliant data or data with "Presumptive Certainty") are data of known accuracy, precision, and sensitivity and do not require additional evaluation in an Analytical Data Usability Assessment. As indicated in the case narratives provided in the laboratory reports prepared by Phoenix Environmental Laboratories, Inc. of Manchester, CT, the analytical data meets the requirements for "Presumptive Certainty".

IES used appropriate sampling methods, sample preservation, and met applicable hold times to ensure the quality of the samples collected as part of this Permanent Solution. In addition, the data were developed in accordance with the provisions of the CAM, and based on the sample collection procedures and information documented in the laboratory analytical reports, IES is of the opinion that the soil and groundwater data comply with DEP's Data Quality Enhancement program and the CAM and qualify for Presumptive Certainty of its quality. IES is also of the opinion that the data relied upon for this Permanent Solution are scientifically valid and defensible, and of a sufficient level of precision, accuracy, and completeness to support this Permanent Solution. IES is also of the opinion that the spatial data used to support this Permanent Solution are adequate, the Representative Evaluation adequately supports the disposal site conditions and environmental decision-making in that is integral to this Permanent Solution submittal.

The laboratory reports for the site generated by and Phoenix Environmental Laboratories were completed in order to supply all of the information required pursuant to 310 CMR 40.0017(3). Included with these laboratory reports are the "MADEP MCP Analytical Method Report Certification Form", and any negative responses were addressed in their "Environmental Laboratory case narrative". Finally, a "QA/QC Summary Report" are included as part of the laboratory reports.

The analytical data used to support the Permanent Solution was generated pursuant to the Department's Compendium of Analytical Methods (CAM), a Data Usability Assessment was performed to confirm that the appropriate Response Action Performance Standards



(RAPS) have been achieved with respect to data quality and use in accordance with 310 CMR 40.0191(2)(c). The Data Usability Assessment considered the MADEP's "Compendium of Quality Assurance and Quality Control Requirements and Performance Standards for Selected Analytical Methods used in Support of Response Actions for the Massachusetts Contingency Plan (Policy #02-320) and the MADEP's "Representativeness Evaluations and Data Usability Assessments Policy" (Policy #WSC-07-350).

Existing Data:

Available soil and groundwater data for the site are summarized in Tables 2 through 4A in **Attachment "B"**. As shown below, sample collection proceeded iteratively as disposal site conditions and potential exposure concerns warranted and employ multiple lines of evidence in determining if a condition of No Significant Risk has been achieved.

April 2017: Nineteen (19) soil samples collected from six (6) test borings screened for headspace VOC's; and laboratory analysis four (4) soil samples (IES-1/S-2, IES-4/S-5, IES-5/S-4, and IES-6/S-2) and of five (5) groundwater samples (IES-1, IES-2, IES-4, IES-5, and IES-6) collected as part of a subsurface investigation conducted in conjunction with a "Subsurface Investigation" report addressing potential contaminant sources identified in a "Phase 1 Environmental Site Assessment" report by IES.

September/October 2017: Twelve (12) soil samples (SS-1 through SS-12) collected from the bottom and sidewalls of the RAM excavation screened for headspace VOC's; and laboratory analysis eight (8) soil samples (SS-1, SS-2, SS-3, SS-4, SS-5, SS-6, SS-7, and SS-9) collected as RAM excavation limit samples.

Data Usability Assessment:

The purpose of the Data Usability Assessment is to evaluate the quality of the dataset and to determine its usability in the subsequent representativeness evaluation. It is noted that none of the soil or groundwater testing results were obtained prior to the current CAM policy. Therefore, a detailed Data Usability Assessment of the pre-CAM data was not warranted for this site. However, as noted above as indicated in the case narratives provided in the laboratory reports prepared by Phoenix Environmental Laboratories, Inc. of Manchester, CT, the analytical data meets the requirements for "Presumptive Certainty".

One (1) round of groundwater testing has been conducted at the site (April 2017) at which time only trace to very low levels of VPH compounds and target VOC's were detected and at levels of 30% or below the applicable MCP Method 1 GW-2 and GW-3 Standards, and it is noted that no NAPL was measured in any of the monitoring wells during any rounds of testing conducted at the site over the past five years.

As previously noted Chlorinated Volatile Organic Compounds (CVOC's), including Tetrachloroethylene (PCE) and Trichloroethylene (TCE) were also detected in the groundwater at the site. However, the CVOC's are associated with a separate release (RTN 3-23246) originating from an off-site source (50 Tufts Street) and are not associated with RTN 3-34310 and this Permanent Solution Statement.



Representativeness Evaluation:

A Representativeness Evaluation was performed to evaluate and demonstrate the adequacy of the spatial and temporal data sets used to support the decisions in the Permanent Solution and included an evaluation of sampling locations, temporal data, data inconsistency, and data not used.

Sampling Locations: Sampling locations were based on existing data previously generated during the subsurface investigation conducted at the site by IES in April of 2017 and during RAM excavation activities conducted at the site in September and October of 2017.

Extensive site history was developed for the area, based on Sanborn Insurance Atlases, historical aerial photographs, and City of Somerville municipal records, as part of a “Phase 1 Environmental Site Assessment” dated March 24, 2017, prepared by IES, Inc. As shown in Tables 1 through 4A in **Attachment “B”**, based on headspace screening results of thirty-one (31) soil samples collected from six (6) test borings, and from twelve (12) post-RAM excavation limit samples, a total of twelve (12) soil samples (IES-1/S-2, IES-4/S-5, IES-5/S-4, IES-6/S-2, SS-1, SS-2, SS-3, SS-4, SS-5, SS-6, SS-7, and SS-9) were submitted for laboratory analysis. In addition, five (5) groundwater sampling locations (IES-1, IES-2, IES-4, IES-5, and IES-6) have been utilized at the site, in order to address the release associated with RTN 3-34310.

Based on the fact that the only contaminants present above the applicable Reportable Concentrations and/or MCP Method 1 Standards were gasoline-related VPH compounds (C₅-C₈ Aliphatics, C₉-C₁₀ Aromatics, and C₉-C₁₂ Aliphatics) and one target VOC (Naphthalene, above the RCS-1 Standard but below the Method 1 S-1 Standards), the laboratory testing for EPH/VPH with target analytes and VOC’s via EPA Method 8260 for soil and groundwater was appropriate to identify the most significant Contaminants of Concern associated with this release.

Temporal Data: Temporal data reviewed for the Site has included the following:

- Environmental assessment and investigation activities have been conducted at the site in April, September, and October of 2017 and included the collection of soil samples from six (6) test boring locations and twelve (12) additional RAM Excavation limit locations and groundwater samples from five (5) monitoring wells installed on the 0.13-acre property. This data was reviewed in support of an overall understanding of the nature and extent of contamination at the Disposal Site.
- Soil samples were collected during the drilling programs at depths that would display the highest levels of contamination as well as shallow depths that would display levels that a tenant or visitor of the site.
- Groundwater samples utilized for this investigation included testing performed in April of 2017, which indicated trace to low contaminant levels, but at levels well below (i.e. 30% or less) of the applicable Reportable Concentrations (RCGW-2) or MCP Method 1 GW-2 or GW-3 standards.

Data Inconsistency: No significant inconsistencies were identified during the soil and groundwater testing programs.

Data Not Used: All data generated by the subsurface investigations and groundwater testing programs were used in support of the Permanent Solution, including the Soil Characterization testing for the off-site disposal of contaminated soil generated as part of the RAM.

Field Screening: Visual observation was used during test boring installations by IES for evidence of gross contamination. Soil samples were screened in the field using the jar headspace method. Samples with the highest readings were submitted to the laboratory for additional analysis. During groundwater sampling activities, dedicated down-hole sampling equipment was used in order to obtain the most accurate data regarding the presence of NAPL (indicating that none was present).

- (l) *A description of any operation, maintenance, and/or monitoring that will be required to confirm and/or maintain those conditions at the disposal site upon which the Permanent Solution is based;*

The Permanent Solution submitted for RTN 3-34310 at 103 Washington Street in Somerville is not based on the requirement of any operation, maintenance, and/or monitoring.

SECTION 6

Conclusions

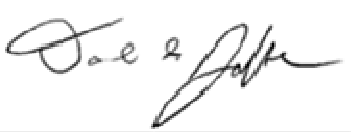
A Permanent Solution Statement and has been prepared for RTN 3-34310 at 103 Washington Street in Somerville, and form BWSC-104 is submitted concurrently via eDEP. Based on the conclusions of the Risk Characterization, which show a condition of No Significant Risk has been achieved at the site under existing conditions and those in the foreseeable future, a Permanent Solution with No Conditions has been determined to be appropriate for this site.

The Permanent Solution with No Conditions indicates the following:

1. A level of No Significant Risk has been achieved for existing and future conditions;
2. All sources of OHM have been eliminated to the extent feasible and/or controlled;
3. Dissolved OHM in groundwater and vapor phase OHM are stable;
4. NAPL is not present at the site;
5. All threats of release have been eliminated;
6. Residual OHM concentrations in the environment have been reduced to as close to background levels as feasible;
7. No OHM exists at concentrations above UCLs;
8. An Activity and Use Limitation is not required to maintain a condition of No Significant Risk.

Finally, in accordance with 310 CMR 40.1403(3)(c) and 310 CMR 40.1403(3)(f), the Chief Municipal Official of Somerville and the Director of the Somerville Health Department have been notified of this submittal. Copies of the Public Notification letters are included in **Attachment "G"** of this submittal

Respectfully submitted,
IES, Inc.



Daniel G. Jaffe, LSP (#2347)
President

Reviewed by:



Christopher Buchanan
Senior Geologist

ATTACHMENT “A”

Figures

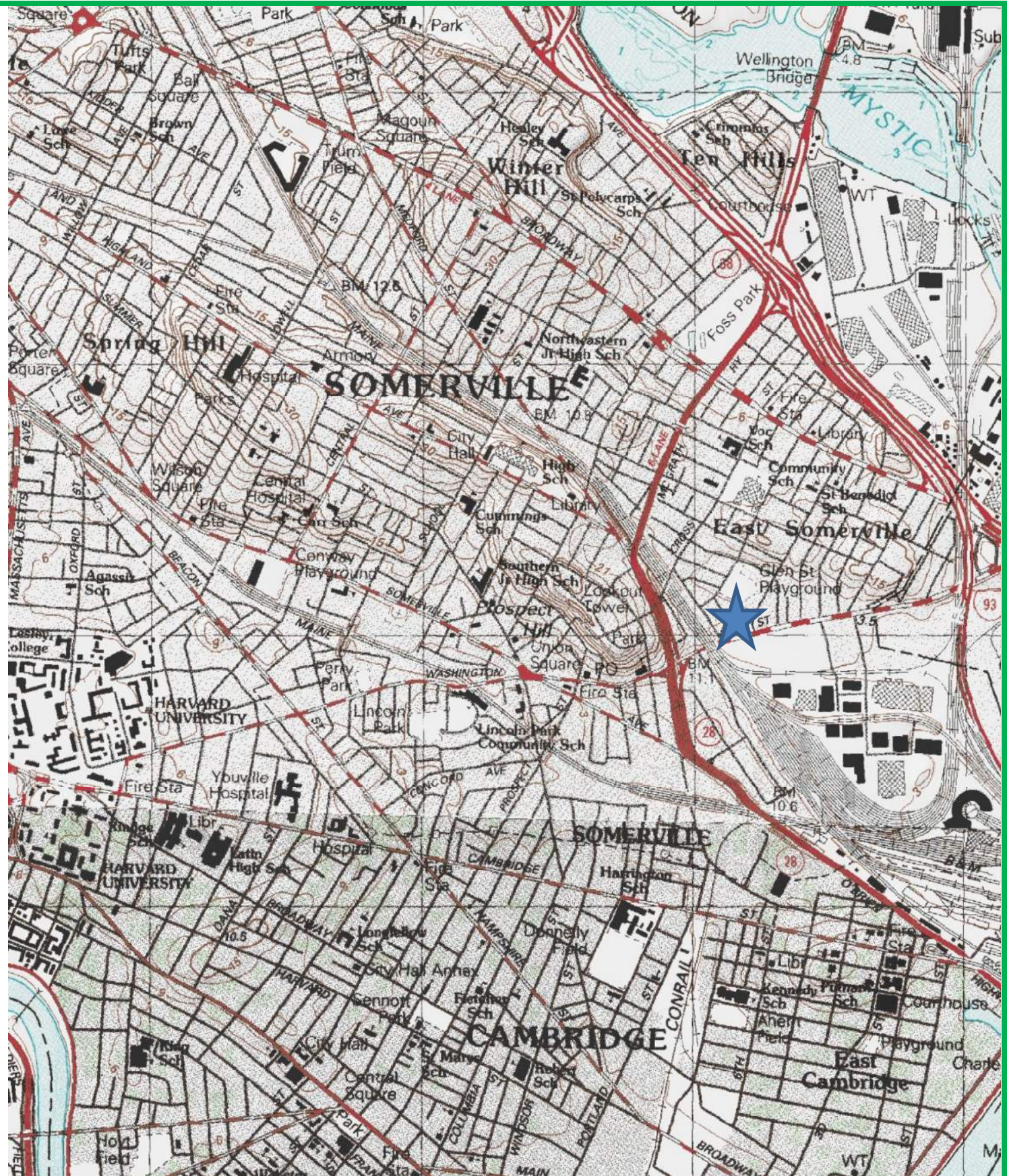


FIGURE 1:

**USGS BOSTON NORTH
QUADRANGLE**

**103 WASHINGTON STREET
SOMERVILLE, MA**



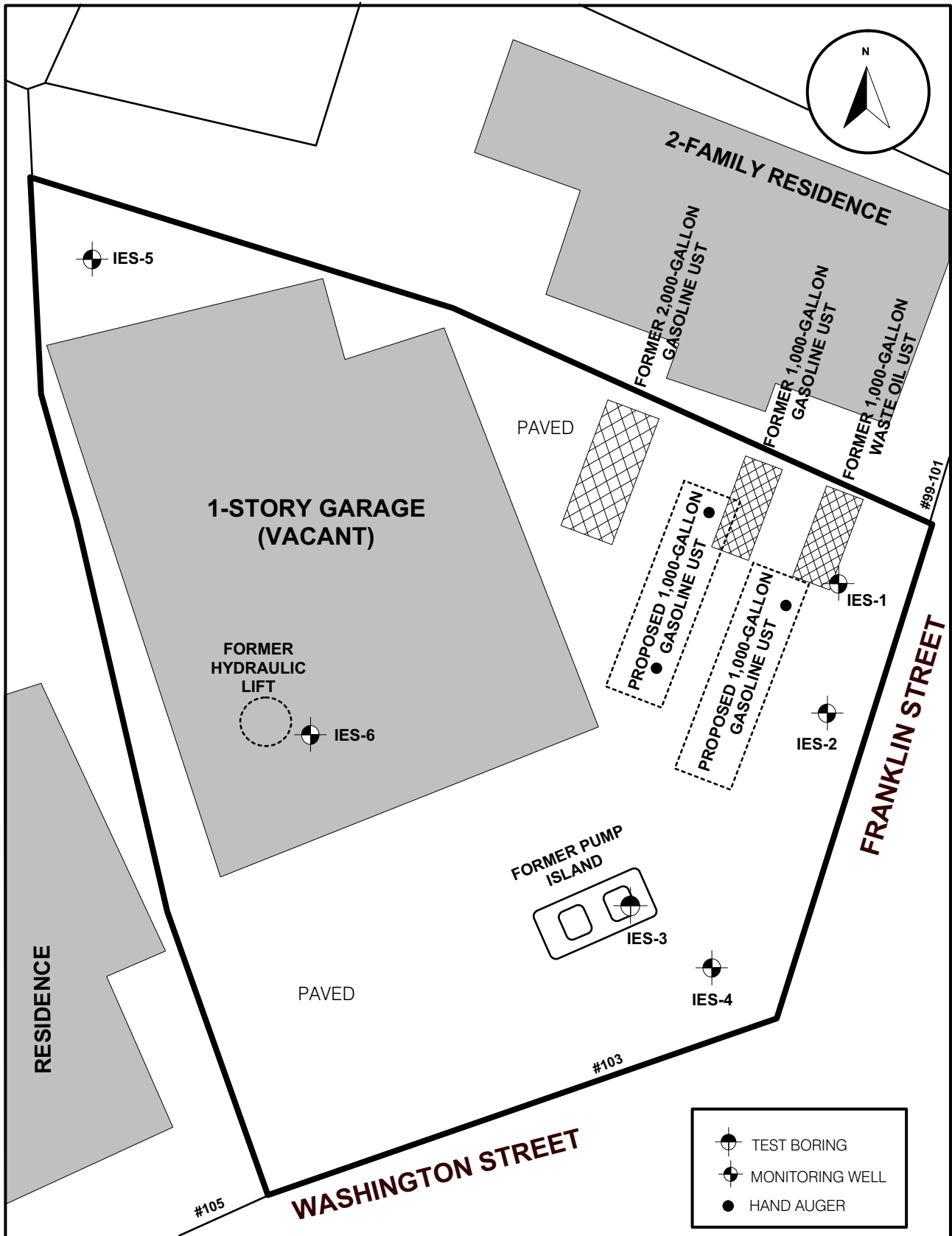
FIGURE 2:

**CITY OF SOMERVILLE
ASSESSOR's MAP**

**103 WASHINGTON STREET
SOMERVILLE, MA**



**ENVIRONMENTAL
CONSULTANTS**



Pre-RAM SITE PLAN
103 WASHINGTON STREET,
SOMERVILLE, MA

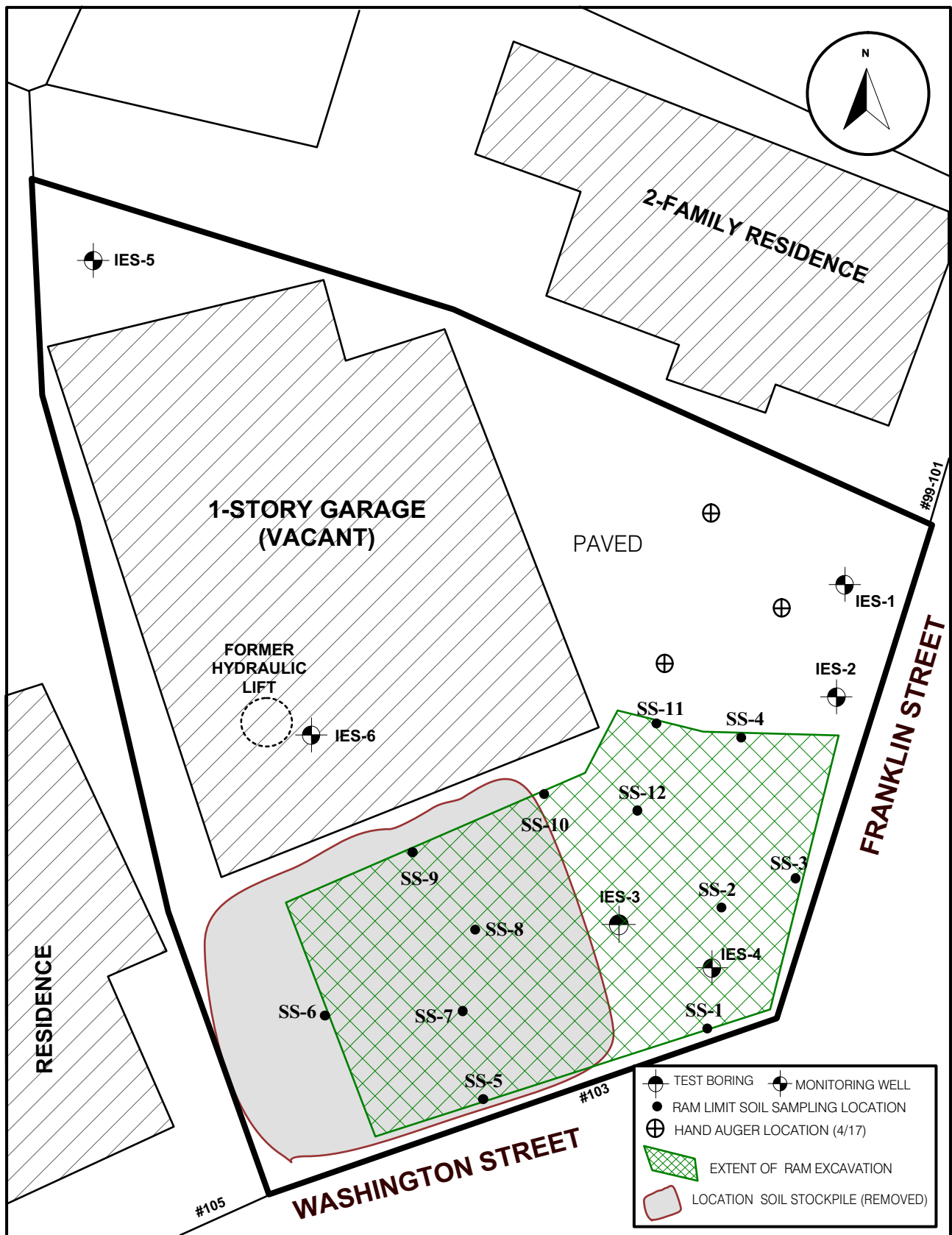
OCTOBER 2017

APPROXIMATE SCALE

7.5 0 15 FT

FIGURE 3





SITE PLAN
103 WASHINGTON STREET,
SOMERVILLE, MA

NOVEMBER 2017

APPROXIMATE SCALE

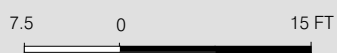


FIGURE 4



MassDEP - Bureau of Waste Site Cleanup

Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:

VACANT GARAGE
103 WASHINGTON STREET SOMERVILLE, MA
3-000034310

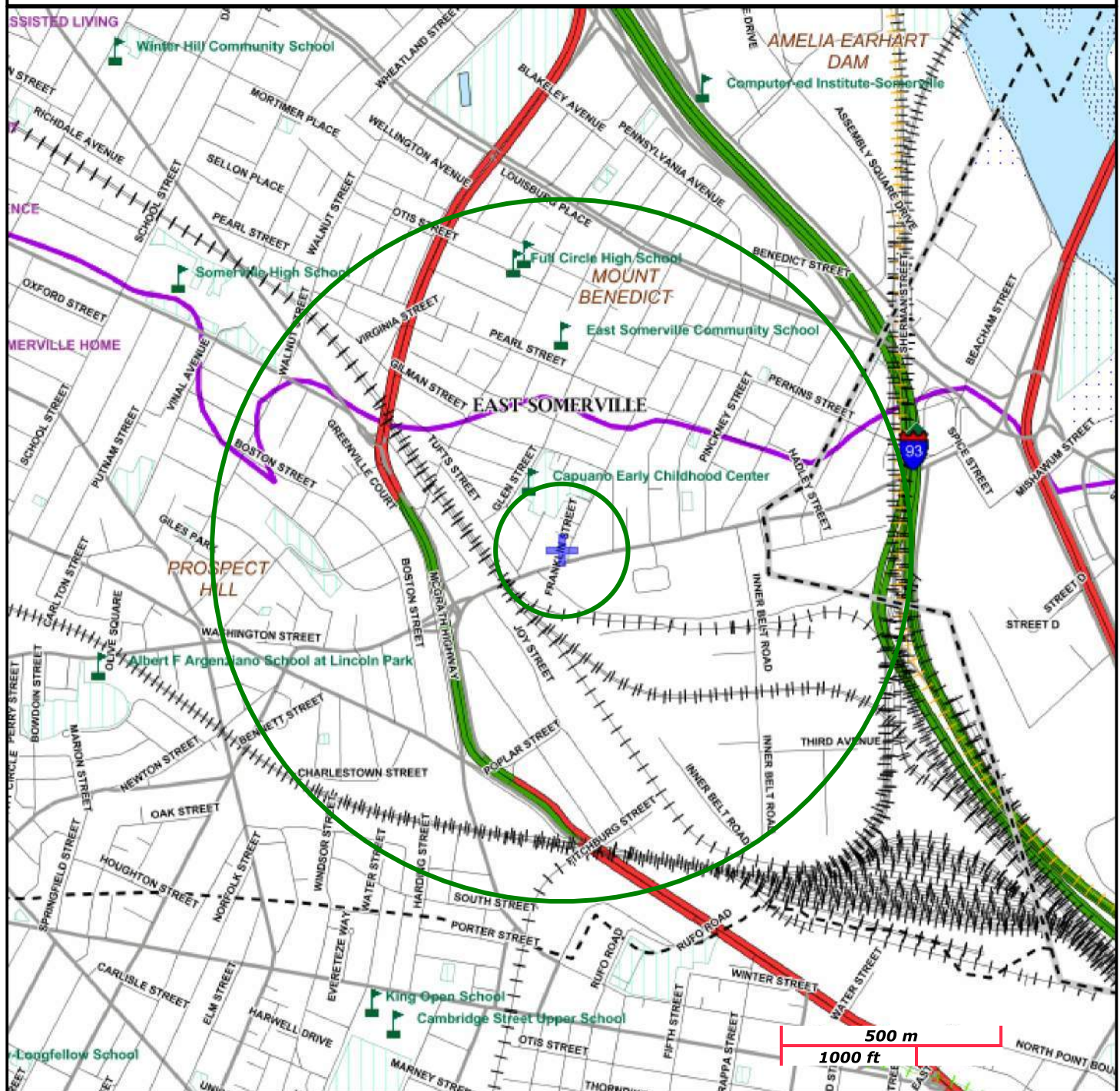
NAD83 UTM Meters:
4694248mN, 328242mE (Zone: 19)
October 3, 2017

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at:
<http://www.mass.gov/mgis/>.



MassDEP

Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Aquifers: Medium Yield, High Yield, EPA Sole Source

Non Potential Drinking Water Source Area: Medium, High (Yield)

PWS Protection Areas: Zone II, IWPA, Zone A

Hydrography: Open Water, PWS Reservoir, Tidal Flat

Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMA 100yr Floodplain; Protected Open Space; ACEC

Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential

Solid Waste Landfill; PWS: Com. GW, SW, Emerg., Non-Com.

ATTACHMENT “B”

Tables

Table 1
Soil Sample Screening Results – April 2017

Boring No.	Sample No.	Depth (feet)	VOC's (ppmv)		Boring No.	Sample No.	Depth (feet)	VOC's (ppmv)	
IES-1 (MW)	S-1	0.0 – 5.0	0		IES-5 (MW)	S-1	0.0 – 5.0	4	
	S-2	5.0 – 10.0	121			S-2	5.0 – 7.5	1	
	S-3	10.0 – 15.0	235			S-3	7.5 – 10.0	2	
			S-4			10.0 – 15.0	2		
IES- 2 (MW)	S-1	0.0 – 5.0	0		IES-6 (MW)	S-1	0.0 – 5.0	0	
	S-2	5.0 – 10.0	0			S-2	5.0 – 10.0	3	
	S-3	10.0 – 15.0	0			S-3	10.0 – 15.0	5	
IES-3	S-1	0.0 – 2.5	9		Notes: 1. MiniRae Lite Photoionization Detector (PID) 2. Results adjusted for Benzene 3. Background at 0.0 parts per million (ppm) 4. Bold submitted for Laboratory Analysis				
IES-4 (MW)	S-1	0.0 – 2.5	46						
	S-2	2.5 – 5.0	154						
	S-3	5.0 - 7.5	204						
	S-4	7.5 – 10.0	738						
	S-5	10.0 – 15.0	854						

Table 2
Pre-RAM Soil Sample Laboratory Results – April 2017

Sample ID	IES-1/ S-2	IES-4/ S-5	IES-5/ S-4	IES-6/ S-2	MCP Method 1	
Depth (feet)	5 – 10	10 – 15	10 – 15	5 – 10	S-1/ GW-2	S-2/ GW-3
VOC's (ppm)	121	854	2	3		
VPH (mg/kg)						
C ₅ -C ₈ Aliphatics	41	1,700	NT	NT	100	100
C ₉ -C ₁₀ Aromatics	26	640	NT	NT	100	100
C ₉ -C ₁₂ Aliphatics	63	1,900	NT	NT	1,000	1,000
VOC's (mg/kg):						
m,p-Xylenes	0.71	<5.3	<0.0047	NT	100	500
Naphthalene	0.44	5.0	<0.0047	NT	20	500
cis-1,2-Dichloroethene	NT	NT	0.012	NT	0.1	100
Tetrachloroethene	NT	NT	0.19	NT	10	30
Trichloroethene	NT	NT	0.09	NT	0.3	30
EPH (mg/kg)						
C ₁₁ -C ₂₂ Aromatics	NT	NT	NT	49	1,000	1,000
C ₁₉ -C ₃₆ Aliphatics	NT	NT	NT	72	1,000	1,000
C ₉ -C ₁₈ Aliphatics	NT	NT	NT	<4.0	1,000	1,000
PAHs (mg/kg)	NT	NT	NT	ND		
Notes: Bold: Compound detected at a level <i>above</i> the MCP Method 1 S-1 Standard NT = Not Tested ND = Not Detected (all PAH's below laboratory quantitation limits)						

Table 3
Summary of Groundwater Testing Results – April 2017

Sample ID	IES-1	IES-2	IES-4	IES-5	IES-6	Method 1	
Water Table (feet):	3.75	11.94	10.28	2.25	9.35	GW-2	GW-3
Well Depth (feet):	12.90	12.93	12.75	13.05	12.83		
VPH (mg/l):							
C ₅ -C ₈ Aliphatics	<0.1	<0.1	0.92	NT	NT	3	50
C ₉ -C ₁₀ Aromatics	<0.1	<0.1	0.84	NT	NT	4	50
C ₉ -C ₁₂ Aliphatics	<0.1	<0.1	1.3	NT	NT	5	50
VOC's (mg/l):							
Benzene	<0.0007	<0.001	0.012	<0.0007	<0.0007	1	10
Ethylbenzene	<0.001	<0.001	0.063	<0.001	<0.001	20	5
m,p-Xylenes	<0.001	<0.003	0.049	<0.001	<0.001	3	5
o-Xylene	<0.001	<0.001	0.0098	<0.001	<0.001		
Naphthalene	<0.001	<0.005	0.069	<0.001	<0.001	0.7	20
Toluene	<0.001	<0.001	0.0043	<0.001	<0.001	50	40
Methyl tert-butyl ether	<0.001	<0.005	<0.005	0.0016	0.0098	50	50
Acetone	<0.025	NT	NT	<0.025	0.047	50	50
cis-1,2-Dichloroethene	<0.001	NT	NT	0.018	<0.001	0.020	50
Methyl ethyl ketone	<0.005	NT	NT	<0.005	0.0085	50	50
Tetrachloroethylene	<0.001	NT	NT	0.2	0.0035	0.05	30
Trichloroethylene	<0.001	NT	NT	0.046	<0.001	0.005	5
EPH (mg/l):	ND	NT	ND	NT	NT		
PAH's (mg/l):							
2-Methylnaphthalene	<0.0001	NT	0.014	NT	NT	2	20
Benz(a)anthracene	<0.00002	NT	0.00009	NT	NT	N/A	1
Benzo(a)pyrene	<0.00002	NT	0.00009	NT	NT	N/A	0.5
Benz(b)fluoranthene	<0.00002	NT	0.00017	NT	NT	N/A	0.4
Benzo(g,h,i)perylene	<0.0001	NT	0.00016	NT	NT	N/A	0.02
Benzo(k)fluoranthene	<0.00002	NT	0.00012	NT	NT	N/A	0.1
Chrysene	<0.00002	NT	0.00018	NT	NT	N/A	0.07
Dibenz(a,h)anthracene	<0.00001	NT	0.00005	NT	NT	N/A	0.04
Fluoranthene	<0.0001	NT	0.00015	NT	NT	N/A	0.2
Indeno(1,2,3-cd)pyrene	<0.00002	NT	0.00013	NT	NT	N/A	0.1
Naphthalene	0.00015	NT	0.033	NT	NT	0.7	20
Phenanthrene	<0.00007	NT	0.00017	NT	NT	N/A	10
Pyrene	<0.0001	NT	0.00023	NT	NT	N/A	0.02
Dissolved RCRA 8 Metals (mg/l)							
Barium	0.84	NT	NT	NT	NT	N/A	50
Selenium	0.013	NT	NT	NT	NT	N/A	0.1
Notes: ND = Not Detected (result is below laboratory quantification limits) NT = Not Tested Bold = Exceeds the MCP Method 1 GW-2 Standard							

Table 4
Summary of Post-Excavation Soil Sampling

[illegible]

Table 4A
Summary of Post-Excavation Soil Sampling – October 2017

[illegible]

Table 5
Summary of Soil Characterization Results

	S-1	S-1A/S-2A
Metals (mg/kg):		
Arsenic	11.5	NT
Cadmium	<0.38	NT
Chromium	51.2	NT
Lead	24.7	NT
VOC's (mg/kg):		
1,2,4-Trimethylbenzene	3.8	4.1
1,3,5-Trimethylbenzene	1.1	1.2
Ethylbenzene	0.79	0.79
Isopropylbenzene	0.21	0.21
Total Xylenes	0.54	0.63
Naphthalene	2.7	3.1
n-Butylbenzene	0.75	0.84
n-Propylbenzene	0.9	0.92
sec-Butylbenzene	0.22	0.23
Total VOC's	11.01	12.02
Other Parameters		
TCLP Lead (mg/l)	0.066	NT
Corrosivity	Negative	NT
Flashpoint	>200	NT
Ignitability	Passed	NT
pH	8.02	NT
Reactive Cyanide	<6	NT
Reactive Sulfide	<20	NT
Reactivity	Negative	NT
PCB 1254 (mg/kg)	0.17	NT
TPH (mg/kg)	99*	<62
Notes: * = TPH via GC was "unidentified" NT = Not Tested		

ATTACHMENT “C”

Test Boring Logs

TEST BORING LOG							(page 1 of 6)
				Project 2017-02-0115 103 Washington St. Somerville, MA		Boring ID: IES-1	
Date Started: 4/6/17			Geologist: John Beck			Drilling Contractor: TDS	
Date Finished: 4/6/17			Project Manager: John Beck				
Depth (feet)	Casing bl/ft	Sample				Strata	Visual Identification of Soil and/or Rock Sample
		No.	OVM	Depth	Blows/6"		
1		S-1	0	0'-5'0"		15'	Asphalt (rec. 2.5') Damp, gy, sandy fill w/ gravel.
5		S-2	121	5'0"-10'0"			(rec. 2') 6" of wet, coarse gy sd w/ angular red and green gravel, over 1.5' wet, very coarse angular green and red gravel w/ gasoline odor and sheen.
10		S-3	235	10'0"-15'0"			(rec. 1') Wet, green and red, coarse angular gravel w/ gasoline odor and sheen.
15							End of probe at 15' 0" Groundwater encountered at approx. 5'6". Monitoring well set at 13'.
20							
25							
30							
Rig: Track-mounted, percussion hammer driving system (geoprobe) Sampling Equipment: 1 ³ / ₈ " diameter stainless-steel sampling tube. OVM = Organic Vapor Meter (parts per million - calibrated to benzene standard).							
Cohesionless: 0-4 = Very Loose; 4-10 = Loose; 10-30 = Medium Dense; 30-50 = Dense; 50+ = Very Dense Cohesive: 0-2 = Very Soft; 2-4 = Soft; 4-8 = Medium Stiff; 8-15 = Stiff; 15-30 = Very Stiff; 30+ = Hard						Trace: 0% – 10% Little: 10% – 20% Some: 20% – 35% And: 35% – 50%	

TEST BORING LOG							(page 2 of 6)
				Project 2017-02-0115 103 Washington St. Somerville, MA		Boring ID: IES-2	
Date Started: 4/6/17			Geologist: John Beck			Drilling Contractor: TDS	
Date Finished: 4/6/17			Project Manager: John Beck				
Depth (feet)	Casing bl/ft	Sample				Strata	Visual Identification of Soil and/or Rock Sample
		No.	OVM	Depth	Blows/6"		
1		S-1	0	0'0"-5'0"		15'	Asphalt (rec. 2.5') Dry sandy fill over dry to dam, gy clay with iron mottling.
5		S-2	0	5'0"-10'0"			(rec. 5') Dry, greenish gy, dense clay.
10		S-3	0	10'0"- 15'0"			(rec. 4') Dry, greenish gy, dense clay w/ occ. large, angular rocks.
15							End of probe at 15' 0" Groundwater table unknown. Monitoring well set at 13'.
20							
25							
30							
35							
Rig: Track-mounted, percussion hammer driving system (geoprobe) Sampling Equipment: 1 ³ / ₈ " diameter stainless-steel sampling tube. OVM = Organic Vapor Meter (parts per million - calibrated to benzene standard).							
Cohesionless: 0-4 = Very Loose; 4-10 = Loose; 10-30 = Medium Dense; 30-50 = Dense; 50+ = Very Dense Cohesive: 0-2 = Very Soft; 2-4 = Soft; 4-8 = Medium Stiff; 8-15 = Stiff; 15-30 = Very Stiff; 30+ = Hard						Trace: 0% – 10% Little: 10% – 20% Some: 20% – 35% And: 35% – 50%	

TEST BORING LOG							(page 3 of 6)
				Project 2017-02-0115 103 Washington St. Somerville, MA		Boring ID: B-3	
Date Started: 4/6/17			Geologist: John Beck			Drilling Contractor: TDS	
Date Finished: 4/6/17			Project Manager: John Beck				
Depth (feet)	Casing bl/ft	Sample				Strata	Visual Identification of Soil and/or Rock Sample
		No.	OVM	Depth	Blows/6"		
1		S-1	9	0'0"-2'5"		2.5'	Asphalt (rec. 1') Damp, gy to brn, sandy fill w/ slight oily odor. End of probe at 2' 5". Groundwater not encountered. Rock refusal at 2'5"
5							
10							
15							
20							
25							
30							
Rig: Track-mounted, percussion hammer driving system (geoprobe) Sampling Equipment: 1 ³ / ₈ " diameter stainless-steel sampling tube. OVM = Organic Vapor Meter (parts per million - calibrated to benzene standard).							
Cohesionless: 0-4 = Very Loose; 4-10 = Loose; 10-30 = Medium Dense; 30-50 = Dense; 50+ = Very Dense Cohesive: 0-2 = Very Soft; 2-4 = Soft; 4-8 = Medium Stiff; 8-15 = Stiff; 15-30 = Very Stiff; 30+ = Hard						Trace: 0% – 10% Little: 10% – 20% Some: 20% – 35% And: 35% – 50%	

TEST BORING LOG							(page 4 of 6)
				Project 2017-02-0115 103 Washington St. Somerville, MA		Boring ID: IES-4	
Date Started: 4/6/17			Geologist: John Beck			Drilling Contractor: TDS	
Date Finished: 4/6/17			Project Manager: John Beck				
Depth (feet)	Casing bl/ft	Sample				Strata	Visual Identification of Soil and/or Rock Sample
		No.	OVM	Depth	Blows/6"		
1		S-1	46	0'0"-2'6"		15'	Asphalt (rec. 2') 6" asphalt over 1.5' of dry, greenish-gy, coarse, sandy fill.
		S-2	154	2'6" - 5'0"			(rec. 2') 2' of damp, gy clay w/ gasoline odor.
5		S-3	204	5'0"-7'6"			(rec. 2') Dry, greenish-gy, dense clay w/ strong gasoline odor.
		S-4	738	7'6"-10'0"			(rec. 2') Dry, greenish-gy, dense clay w/ strong gasoline odor.
10		S-5	854	10'0"-15'0"			(rec. 3') 1' of dense, dry, greenish gy clay w/ gasoline odor over 2' damp, sandy, yellowish gy clay w/ strong gasoline odor.
15							_____ End of probe at 15' 0". Groundwater depth unknown. Monitoring well set at 13'.
20							
25							
30							
35							
Rig: Track-mounted, percussion hammer driving system (geoprobe) Sampling Equipment: 1 ³ / ₈ " diameter stainless-steel sampling tube. OVM = Organic Vapor Meter (parts per million - calibrated to benzene standard).							
Cohesionless: 0-4 = Very Loose; 4-10 = Loose; 10-30 = Medium Dense; 30-50 = Dense; 50+ = Very Dense Cohesive: 0-2 = Very Soft; 2-4 = Soft; 4-8 = Medium Stiff; 8-15 = Stiff; 15-30 = Very Stiff; 30+ = Hard						Trace: 0% – 10% Little: 10% – 20% Some: 20% – 35% And: 35% – 50%	

TEST BORING LOG						(page 5 of 6)	
				Project 2017-02-0115 103 Washington St. Somerville, MA		Boring ID: IES-5	
Date Started: 4/6/17			Geologist: John Beck			Drilling Contractor: TDS	
Date Finished: 4/6/17			Project Manager: John Beck				
Depth (feet)	Casing bl/ft	Sample				Strata	Visual Identification of Soil and/or Rock Sample
		No.	OVM	Depth	Blows/6"		
1		S-1	4	0'0"-5'0"		15'	Asphalt (rec. 1.5') 6" sandy fill w/ brick and asphalt, over 6" dark gy, damp, clay-rich sandy fill, over 6" dense, gy, clay w/ iron streaks.
5		S-2	1	5'0"-7'6"			(rec. 2.5') Dry, greenish-gy, dense clay w/ slight gasoline odor.
		S-3	2	7'6"-10'0"			(rec. 2.5') Dry, greenish-gy, dense clay w/ slight gasoline odor.
10		S-4	2	10'0"-15'0"			(rec. 3') Dry, greenish-gy, dense clay w/ slight gasoline odor.
15							End of probe at 15' 0". Groundwater depth unknown. Monitoring well set at 13'.
20							
25							
30							
Rig: Track-mounted, percussion hammer driving system (geoprobe) Sampling Equipment: 1 ^{3/8} " diameter stainless-steel sampling tube. OVM = Organic Vapor Meter (parts per million - calibrated to benzene standard).							
Cohesionless: 0-4 = Very Loose; 4-10 = Loose; 10-30 = Medium Dense; 30-50 = Dense; 50+ = Very Dense Cohesive: 0-2 = Very Soft; 2-4 = Soft; 4-8 = Medium Stiff; 8-15 = Stiff; 15-30 = Very Stiff; 30+ = Hard						Trace: 0% – 10% Little: 10% – 20% Some: 20% – 35% And: 35% – 50%	

TEST BORING LOG							(page 6 of 6)
				Project 2017-02-0115 103 Washington St. Somerville, MA		Boring ID: IES-6	
Date Started: 4/6/17			Geologist: John Beck			Drilling Contractor: TDS	
Date Finished: 4/6/17			Project Manager: John Beck				
Depth (feet)	Casing bl/ft	Sample				Strata	Visual Identification of Soil and/or Rock Sample
		No.	OVM	Depth	Blows/6"		
1		S-1	0	0'0"-5'0"		15'	Asphalt (rec. 1.5') 4" concrete over 1' of brn, damp, clay-rich sandy fill w/ brick fragments.
5		S-2	3	5'0"-10'0"			(rec. 1') Dry to damp, dense, yellowish gy clay w/ gasoline (?) odor.
10		S-3	5	10'0"-15'0"			(rec. 2.5') Damp to wet, dense, yellow clay w/ some, thin layers of sandy/gravelly clay.
15							End of probe at 15' 0". Groundwater depth unknown. Monitoring well set at 13'
20							
25							
30							
Rig: Track-mounted, percussion hammer driving system (geoprobe) Sampling Equipment: 1 ³ / ₈ " diameter stainless-steel sampling tube. OVM = Organic Vapor Meter (parts per million - calibrated to benzene standard).							
Cohesionless: 0-4 = Very Loose; 4-10 = Loose; 10-30 = Medium Dense; 30-50 = Dense; 50+ = Very Dense Cohesive: 0-2 = Very Soft; 2-4 = Soft; 4-8 = Medium Stiff; 8-15 = Stiff; 15-30 = Very Stiff; 30+ = Hard						Trace: 0% – 10% Little: 10% – 20% Some: 20% – 35% And: 35% – 50%	

ATTACHMENT “D”

Laboratory Reports



Monday, April 17, 2017

Attn: Mr. John Beck
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Project ID: 103 WASHINGTON ST SOMERVILLE
Sample ID#s: BY00816 - BY00819

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Phyllis Shiller".

Phyllis Shiller

Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 17, 2017

FOR: Attn: Mr. John Beck
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: Standard
P.O.#:

Custody Information

Collected by: JB
Received by: B
Analyzed by: see "By" below

Date

04/06/17
04/07/17

Time

13:30
14:22

Laboratory Data

SDG ID: GBY00816
Phoenix ID: BY00816

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: IES-5 S-4

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	80		%		04/07/17	Q	SW846-%Solid
Field Extraction	Completed				04/06/17		SW5035A

Volatiles

1,1,1,2-Tetrachloroethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,1,1-Trichloroethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.0028	mg/Kg	1	04/08/17	JLI	SW8260C
1,1,2-Trichloroethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,1-Dichloroethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,1-Dichloroethene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,1-Dichloropropene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,2,3-Trichloropropane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,2,4-Trichlorobenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,2,4-Trimethylbenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,2-Dibromoethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,2-Dichlorobenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,2-Dichloroethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,2-Dichloropropane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,3-Dichlorobenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,3-Dichloropropane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
1,4-Dichlorobenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
2,2-Dichloropropane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
2-Chlorotoluene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
2-Hexanone	ND	0.023	mg/Kg	1	04/08/17	JLI	SW8260C
2-Isopropyltoluene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Chlorotoluene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
4-Methyl-2-pentanone	ND	0.023	mg/Kg	1	04/08/17	JLI	SW8260C
Acetone	ND	0.23	mg/Kg	1	04/08/17	JLI	SW8260C
Acrylonitrile	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Benzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Bromobenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Bromochloromethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Bromodichloromethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Bromoform	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Bromomethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Carbon Disulfide	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Carbon tetrachloride	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Chlorobenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Chloroethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Chloroform	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Chloromethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
cis-1,2-Dichloroethene	0.012	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
cis-1,3-Dichloropropene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Dibromochloromethane	ND	0.0028	mg/Kg	1	04/08/17	JLI	SW8260C
Dibromomethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Dichlorodifluoromethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Ethylbenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Hexachlorobutadiene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Isopropylbenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
m&p-Xylene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Methyl Ethyl Ketone	ND	0.028	mg/Kg	1	04/08/17	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	0.0094	mg/Kg	1	04/08/17	JLI	SW8260C
Methylene chloride	ND	0.0094	mg/Kg	1	04/08/17	JLI	SW8260C
Naphthalene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
n-Butylbenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
n-Propylbenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
o-Xylene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
p-Isopropyltoluene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
sec-Butylbenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Styrene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
tert-Butylbenzene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Tetrachloroethene	0.19	0.18	mg/Kg	50	04/08/17	JLI	SW8260C
Tetrahydrofuran (THF)	ND	0.0094	mg/Kg	1	04/08/17	JLI	SW8260C
Toluene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Total Xylenes	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
trans-1,2-Dichloroethene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
trans-1,3-Dichloropropene	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
trans-1,4-dichloro-2-butene	ND	0.0094	mg/Kg	1	04/08/17	JLI	SW8260C
Trichloroethene	0.09	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Trichlorofluoromethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Trichlorotrifluoroethane	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
Vinyl chloride	ND	0.0047	mg/Kg	1	04/08/17	JLI	SW8260C
<u>QA/QC Surrogates</u>							
% 1,2-dichlorobenzene-d4	96		%	1	04/08/17	JLI	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Bromofluorobenzene	98		%	1	04/08/17	JLI	70 - 130 %
% Dibromofluoromethane	97		%	1	04/08/17	JLI	70 - 130 %
% Toluene-d8	102		%	1	04/08/17	JLI	70 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

April 17, 2017

Reviewed and Released by: Ethan Lee, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 17, 2017

FOR: Attn: Mr. John Beck
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: Standard
P.O.#:

Custody Information

Collected by: JB
Received by: B
Analyzed by: see "By" below

Date

04/06/17
04/07/17

Time

8:30
14:22

Laboratory Data

SDG ID: GBY00816
Phoenix ID: BY00817

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: IES-1 S-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	79		%		04/07/17	Q	SW846-%Solid
MA Petroleum Hydrocarbon (VPH)	Completed				04/13/17	CG	MADEP VPH04

VPH Target Analytes

Benzene	ND	0.073	mg/Kg	50	04/08/17	JLI	SW8260C
Ethyl Benzene	ND	0.36	mg/Kg	50	04/08/17	JLI	SW8260C
m,p-Xylenes	0.71	0.36	mg/Kg	50	04/08/17	JLI	SW8260C
MTBE	ND	0.073	mg/Kg	50	04/08/17	JLI	SW8260C
Naphthalene	0.44	0.36	mg/Kg	50	04/08/17	JLI	SW8260C
o-Xylene	ND	0.36	mg/Kg	50	04/08/17	JLI	SW8260C
Toluene	ND	0.36	mg/Kg	50	04/08/17	JLI	SW8260C

MA Volatile Petroleum Hydrocarbons (VPH)

C5-C8 Aliphatic Hydrocarbons *1,2	41	5.9	mg/Kg	50	04/13/17	CG	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	26	5.9	mg/Kg	50	04/13/17	CG	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	63	5.9	mg/Kg	50	04/13/17	CG	MA VPH 5/2004
Unadjusted C5-C8 Aliphatics (*1)	44	5.9	mg/Kg	50	04/13/17	CG	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	88	5.9	mg/Kg	50	04/13/17	CG	MA VPH 5/2004

QA/QC Surrogates

% 2,5-Dibromotoluene (FID)	102		%	50	04/13/17	CG	70 - 130 %
% 2,5-Dibromotoluene (PID)	88		%	50	04/13/17	CG	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

VPH:

*1 Range data exclude concentrations of any surrogate(s) and/or Internal stds eluting in that range.

*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.

*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbons.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

April 17, 2017

Reviewed and Released by: Ethan Lee, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 17, 2017

FOR: Attn: Mr. John Beck
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: Standard
P.O.#:

Custody Information

Collected by: JB
Received by: B
Analyzed by: see "By" below

Date

04/06/17
04/07/17

Time

11:15
14:22

Laboratory Data

SDG ID: GBY00816
Phoenix ID: BY00818

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: IES-4 S-5

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	91		%		04/07/17	Q	SW846-%Solid
MA Petroleum Hydrocarbon (VPH)	Completed				04/13/17	CG	MADEP VPH04

VPH Target Analytes

Benzene	ND	1.1	mg/Kg	1000	04/08/17	JLI	SW8260C
Ethyl Benzene	ND	5.3	mg/Kg	1000	04/08/17	JLI	SW8260C
m,p-Xylenes	ND	5.3	mg/Kg	1000	04/08/17	JLI	SW8260C
MTBE	ND	0.44	mg/Kg	1000	04/08/17	JLI	SW8260C
Naphthalene	5.0	4.0	mg/Kg	1000	04/08/17	JLI	SW8260C
o-Xylene	ND	5.3	mg/Kg	1000	04/08/17	JLI	SW8260C
Toluene	ND	5.3	mg/Kg	1000	04/08/17	JLI	SW8260C

MA Volatile Petroleum Hydrocarbons (VPH)

C5-C8 Aliphatic Hydrocarbons *1,2	1700	110	mg/Kg	1000	04/13/17	CG	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	640	110	mg/Kg	1000	04/13/17	CG	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	1900	110	mg/Kg	1000	04/13/17	CG	MA VPH 5/2004
Unadjusted C5-C8 Aliphatics (*1)	1700	110	mg/Kg	1000	04/13/17	CG	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	2500	110	mg/Kg	1000	04/13/17	CG	MA VPH 5/2004

QA/QC Surrogates

% 2,5-Dibromotoluene (FID)	109		%	1000	04/13/17	CG	70 - 130 %
% 2,5-Dibromotoluene (PID)	94		%	1000	04/13/17	CG	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

VPH:

*1 Range data exclude concentrations of any surrogate(s) and/or Internal stds eluting in that range.

*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.

*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbons.

Volatile Comment:

Elevated reporting limits for volatiles due to the presence of target & non-target compounds.

Volatile Comment:

Where the LOD justifies lowering the RL/PQL, the RL/PQL of some compounds are evaluated below the lowest calibration standard in order to meet criteria.

VPH diluted run

Elevated reporting limits for VPH due to the presence of target and/or non-target compounds.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

April 17, 2017

Reviewed and Released by: Ethan Lee, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 17, 2017

FOR: Attn: Mr. John Beck
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: Standard
P.O.#:

Custody Information

Collected by: JB
Received by: B
Analyzed by: see "By" below

Date

04/06/17
04/07/17

Time

14:00
14:22

Laboratory Data

SDG ID: GBY00816
Phoenix ID: BY00819

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: IES-6 S-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	82		%		04/07/17	Q	SW846-%Solid
Soil Extraction SVOA PAH	Completed				04/07/17	BJ/CKV	SW3545A
EPH Extraction	Completed				04/10/17	ZB/D/I	SW3545A
Ext. Petroleum Hydrocarbons	Completed				04/07/17		MADEP EPH-04

EPH Diesel PAH Target Analytes

2-Methylnaphthalene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Acenaphthene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Naphthalene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Phenanthrene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004

EPH Other PAH Target Analytes

Acenaphthylene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Anthracene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Benz(a)anthracene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Benzo(a)pyrene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Benzo(b)fluoranthene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Benzo(ghi)perylene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Benzo(k)fluoranthene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Chrysene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Dibenz(a,h)anthracene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Fluoranthene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Fluorene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Indeno(1,2,3-cd)pyrene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004
Pyrene	ND	0.28	mg/Kg	1	04/09/17	DD	MA EPH 5/2004

QA/QC Surrogates

% 2-Fluorobiphenyl	80	%	1	04/09/17	DD	30 - 130 %
% Nitrobenzene-d5	64	%	1	04/09/17	DD	30 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Terphenyl-d14	76		%	1	04/09/17	DD	30 - 130 %

MA EPH Aliphatic/Aromatic Ranges

C11-C22 Aromatic Hydrocarbons 1,2*	49	4.0	mg/Kg	1	04/12/17	AW	MA EPH 5/2004
C19-C36 Aliphatic Hydrocarbons 1*	72	4.0	mg/Kg	1	04/12/17	AW	MA EPH 5/2004
C9-C18 Aliphatic Hydrocarbons 1*	ND	4.0	mg/Kg	1	04/12/17	AW	MA EPH 5/2004
Total TPH 1,2*	120	4.0	mg/Kg	1	04/12/17	AW	MA EPH 5/2004

QA/QC Surrogates

% 1-chlorooctadecane (aliphatic)	84		%	1	04/12/17	AW	40 - 140 %
% 2-Bromonaphthalene (Fractionation)	66		%	1	04/12/17	AW	40 - 140 %
% 2-Fluorobiphenyl (Fractionation)	90		%	1	04/12/17	AW	40 - 140 %
% o-terphenyl (aromatic)	94		%	1	04/12/17	AW	40 - 140 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

MAEPH:

1* Hydrocarbon range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.

2* C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH analytes eluting in that range.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

April 17, 2017

Reviewed and Released by: Ethan Lee, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

April 17, 2017

QA/QC Data

SDG I.D.: GBY00816

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 382124 (mg/kg), QC Sample No: BX96823 (BY00819)										
<u>Extractable Petroleum Hydrocarbons - Soil</u>										
C11-C22 Aromatic Hydrocarbons 1	ND	3.3	42	52	21.3	66	60	9.5	40 - 140	25
C19-C36 Aliphatic Hydrocarbons 1*	ND	3.3	48	56	15.4	58	53	9.0	40 - 140	25
C9-C18 Aliphatic Hydrocarbons 1*	ND	3.3	43	48	11.0	54	46	16.0	40 - 140	25
Total TPH 1,2*	ND	3.3	44	53	18.6	62	55	12.0	40 - 140	25
% 1-chlorooctadecane (aliphatic)	82	%	67	73	8.6	76	68	11.1	40 - 140	25
% 2-Bromonaphthalene (Fractionati	52	%	55	68	21.1	96	87	9.8	40 - 140	25
% 2-Fluorobiphenyl (Fractionation)	71	%	80	83	3.7	100	93	7.3	40 - 140	25
% o-terphenyl (aromatic)	82	%	65	77	16.9	84	80	4.9	40 - 140	25

Comment:

Additional EPH fractionation criteria: Breakthrough criteria (BT) is 0 to 5%

QA/QC Batch 382772 (mg/Kg), QC Sample No: BY00817 (BY00817 (50X) , BY00818 (1000X))

Volatile Petroleum Hydrocarbons - Soil

C5-C8 Aliphatic Hydrocarbons *1,2	ND	5.0	99	100	1.0	99	100	1.0	70 - 130	30
C9-C10 Aromatic Hydrocarbons *1	ND	1.7	88	87	1.1	92	94	2.2	70 - 130	30
C9-C12 Aliphatic Hydrocarbons *1,	ND	5.0	95	93	2.1	97	99	2.0	70 - 130	30
Unadjusted C5-C8 Aliphatics (*1)	ND	5.0	99	100	1.0	99	100	1.0	70 - 130	30
Unadjusted C9-C12 Aliphatics (*1)	ND	5.0	95	93	2.1	97	99	2.0	70 - 130	30
% 2,5-Dibromotoluene (FID)	95	%	104	105	1.0	105	96	9.0	70 - 130	30
% 2,5-Dibromotoluene (PID)	83	%	92	93	1.1	93	85	9.0	70 - 130	30

QA/QC Batch 382071 (mg/Kg), QC Sample No: BY00933 (BY00816, BY00817 (50X) , BY00818 (1000X))

Volatiles - Soil

1,1,1,2-Tetrachloroethane	ND	0.005	91	90	1.1	84	87	3.5	70 - 130	30
1,1,1-Trichloroethane	ND	0.005	88	87	1.1	81	84	3.6	70 - 130	30
1,1,2,2-Tetrachloroethane	ND	0.003	92	85	7.9	80	79	1.3	70 - 130	30
1,1,2-Trichloroethane	ND	0.005	87	82	5.9	84	83	1.2	70 - 130	30
1,1-Dichloroethane	ND	0.005	87	86	1.2	85	86	1.2	70 - 130	30
1,1-Dichloroethene	ND	0.005	87	87	0.0	73	77	5.3	70 - 130	30
1,1-Dichloropropene	ND	0.005	90	91	1.1	92	93	1.1	70 - 130	30
1,2,3-Trichlorobenzene	ND	0.005	93	86	7.8	91	93	2.2	70 - 130	30
1,2,3-Trichloropropane	ND	0.005	87	80	8.4	77	77	0.0	70 - 130	30
1,2,4-Trichlorobenzene	ND	0.005	87	82	5.9	88	93	5.5	70 - 130	30
1,2,4-Trimethylbenzene	ND	0.001	86	85	1.2	85	87	2.3	70 - 130	30
1,2-Dibromo-3-chloropropane	ND	0.005	93	86	7.8	156	178	13.2	70 - 130	30
1,2-Dibromoethane	ND	0.005	89	84	5.8	86	85	1.2	70 - 130	30
1,2-Dichlorobenzene	ND	0.005	90	87	3.4	88	90	2.2	70 - 130	30
1,2-Dichloroethane	ND	0.005	85	83	2.4	80	82	2.5	70 - 130	30
1,2-Dichloropropane	ND	0.005	87	86	1.2	89	89	0.0	70 - 130	30
1,3,5-Trimethylbenzene	ND	0.001	87	87	0.0	86	88	2.3	70 - 130	30
1,3-Dichlorobenzene	ND	0.005	89	88	1.1	88	90	2.2	70 - 130	30
1,3-Dichloropropane	ND	0.005	88	84	4.7	86	84	2.4	70 - 130	30

QA/QC Data

SDG I.D.: GBY00816

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
1,4-Dichlorobenzene	ND	0.005	87	85	2.3	86	88	2.3	70 - 130	30
2,2-Dichloropropane	ND	0.005	89	88	1.1	84	84	0.0	70 - 130	30
2-Chlorotoluene	ND	0.005	88	87	1.1	88	90	2.2	70 - 130	30
2-Hexanone	ND	0.025	85	76	11.2	77	71	8.1	40 - 160	30
2-Isopropyltoluene	ND	0.005	106	106	0.0	106	108	1.9	70 - 130	30
4-Chlorotoluene	ND	0.005	88	88	0.0	89	89	0.0	70 - 130	30
4-Methyl-2-pentanone	ND	0.025	92	83	10.3	82	79	3.7	40 - 160	30
Acetone	ND	0.01	73	66	10.1	62	60	3.3	40 - 160	30
Acrylonitrile	ND	0.005	100	89	11.6	95	89	6.5	70 - 130	30
Benzene	ND	0.001	87	86	1.2	88	90	2.2	70 - 130	30
Bromobenzene	ND	0.005	89	88	1.1	88	89	1.1	70 - 130	30
Bromochloromethane	ND	0.005	87	84	3.5	82	85	3.6	70 - 130	30
Bromodichloromethane	ND	0.005	91	89	2.2	79	81	2.5	70 - 130	30
Bromoform	ND	0.005	97	92	5.3	71	74	4.1	70 - 130	30
Bromomethane	ND	0.005	90	90	0.0	53	56	5.5	40 - 160	30
Carbon Disulfide	ND	0.005	106	104	1.9	90	92	2.2	70 - 130	30
Carbon tetrachloride	ND	0.005	94	93	1.1	79	83	4.9	70 - 130	30
Chlorobenzene	ND	0.005	87	86	1.2	88	89	1.1	70 - 130	30
Chloroethane	ND	0.005	88	88	0.0	14	14	0.0	70 - 130	30
Chloroform	ND	0.005	91	89	2.2	79	80	1.3	70 - 130	30
Chloromethane	ND	0.005	80	79	1.3	87	84	3.5	40 - 160	30
cis-1,2-Dichloroethene	ND	0.005	87	84	3.5	82	83	1.2	70 - 130	30
cis-1,3-Dichloropropene	ND	0.005	88	87	1.1	85	87	2.3	70 - 130	30
Dibromochloromethane	ND	0.003	97	92	5.3	77	79	2.6	70 - 130	30
Dibromomethane	ND	0.005	89	86	3.4	84	84	0.0	70 - 130	30
Dichlorodifluoromethane	ND	0.005	96	96	0.0	94	94	0.0	40 - 160	30
Ethylbenzene	ND	0.001	88	86	2.3	89	89	0.0	70 - 130	30
Hexachlorobutadiene	ND	0.005	94	94	0.0	95	97	2.1	70 - 130	30
Isopropylbenzene	ND	0.001	91	90	1.1	88	91	3.4	70 - 130	30
m&p-Xylene	ND	0.002	87	85	2.3	89	89	0.0	70 - 130	30
Methyl ethyl ketone	ND	0.005	86	78	9.8	75	73	2.7	40 - 160	30
Methyl t-butyl ether (MTBE)	ND	0.001	99	93	6.3	94	92	2.2	70 - 130	30
Methylene chloride	ND	0.005	77	77	0.0	70	72	2.8	70 - 130	30
Naphthalene	ND	0.005	94	87	7.7	95	93	2.1	70 - 130	30
n-Butylbenzene	ND	0.001	90	89	1.1	87	91	4.5	70 - 130	30
n-Propylbenzene	ND	0.001	90	89	1.1	89	91	2.2	70 - 130	30
o-Xylene	ND	0.002	90	90	0.0	93	93	0.0	70 - 130	30
p-Isopropyltoluene	ND	0.001	90	90	0.0	90	91	1.1	70 - 130	30
sec-Butylbenzene	ND	0.001	93	93	0.0	92	94	2.2	70 - 130	30
Styrene	ND	0.005	88	87	1.1	90	91	1.1	70 - 130	30
tert-Butylbenzene	ND	0.001	89	89	0.0	88	91	3.4	70 - 130	30
Tetrahydrofuran (THF)	ND	0.005	95	85	11.1	84	83	1.2	70 - 130	30
Toluene	ND	0.001	88	87	1.1	88	91	3.4	70 - 130	30
trans-1,2-Dichloroethene	ND	0.005	88	87	1.1	85	87	2.3	70 - 130	30
trans-1,3-Dichloropropene	ND	0.005	85	81	4.8	79	80	1.3	70 - 130	30
trans-1,4-dichloro-2-butene	ND	0.005	106	99	6.8	85	85	0.0	70 - 130	30
Trichloroethene	ND	0.005	90	91	1.1	91	95	4.3	70 - 130	30
Trichlorofluoromethane	ND	0.005	90	89	1.1	19	20	5.1	70 - 130	30
Trichlorotrifluoroethane	ND	0.005	106	104	1.9	93	94	1.1	70 - 130	30
Vinyl chloride	ND	0.005	85	85	0.0	80	81	1.2	70 - 130	30
% 1,2-dichlorobenzene-d4	97	%	100	102	2.0	100	101	1.0	70 - 130	30
% Bromofluorobenzene	94	%	100	99	1.0	99	99	0.0	70 - 130	30
% Dibromofluoromethane	98	%	102	101	1.0	97	97	0.0	70 - 130	30

QA/QC Data

SDG I.D.: GBY00816

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
% Toluene-d8	97	%	100	101	1.0	101	102	1.0	70 - 130	30

Comment:

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

QA/QC Batch 381964 (mg/Kg), QC Sample No: BY01078 (BY00819)

Polynuclear Aromatic HC - Soil

2-Methylnaphthalene	ND	0.23	60	64	6.5	68	69	1.5	40 - 140	30
Acenaphthene	ND	0.23	73	73	0.0	75	79	5.2	40 - 140	20
Acenaphthylene	ND	0.23	68	68	0.0	71	73	2.8	40 - 140	30
Anthracene	ND	0.23	76	74	2.7	75	79	5.2	40 - 140	30
Benz(a)anthracene	ND	0.23	75	73	2.7	75	79	5.2	40 - 140	30
Benzo(a)pyrene	ND	0.23	72	70	2.8	72	75	4.1	40 - 140	30
Benzo(b)fluoranthene	ND	0.23	75	73	2.7	76	81	6.4	40 - 140	30
Benzo(ghi)perylene	ND	0.23	67	75	11.3	54	60	10.5	40 - 140	30
Benzo(k)fluoranthene	ND	0.23	78	75	3.9	80	81	1.2	40 - 140	30
Chrysene	ND	0.23	80	77	3.8	81	86	6.0	40 - 140	30
Dibenz(a,h)anthracene	ND	0.23	66	72	8.7	54	60	10.5	40 - 140	30
Fluoranthene	ND	0.23	73	70	4.2	75	78	3.9	40 - 140	30
Fluorene	ND	0.23	72	72	0.0	74	75	1.3	40 - 140	30
Indeno(1,2,3-cd)pyrene	ND	0.23	63	70	10.5	53	58	9.0	40 - 140	30
Naphthalene	ND	0.23	62	65	4.7	70	73	4.2	40 - 140	30
Phenanthrene	ND	0.23	75	72	4.1	77	79	2.6	40 - 140	30
Pyrene	ND	0.23	75	72	4.1	76	80	5.1	40 - 140	20
% 2-Fluorobiphenyl	70	%	70	69	1.4	71	75	5.5	30 - 130	20
% Nitrobenzene-d5	59	%	58	63	8.3	70	70	0.0	30 - 130	20
% Terphenyl-d14	78	%	73	69	5.6	69	73	5.6	30 - 130	20

QA/QC Batch 382098 (mg/Kg), QC Sample No: BY01080 (BY00816 (50X))

Volatiles - Soil

Tetrachloroethene	ND	0.005	100	95	5.1	105	101	3.9	70 - 130	30
-------------------	----	-------	-----	----	-----	-----	-----	-----	----------	----

Comment:

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

m = This parameter is outside laboratory MS/MSD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference

LCS - Laboratory Control Sample

LCSD - Laboratory Control Sample Duplicate

MS - Matrix Spike

MS Dup - Matrix Spike Duplicate

NC - No Criteria

Intf - Interference



Phyllis Shiller, Laboratory Director

April 17, 2017

Monday, April 17, 2017
Criteria: MA: GW2, S1
State: MA

Sample Criteria Exceedances Report
GBY00816 - IESINC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL	Analysis Units
BY00818	\$VPHMS-SM	Naphthalene	MA / CMR 310.40.1600 / S1 (mg/kg)	5.0	4.0	4	4	mg/Kg
BY00818	\$VPHMS-SM	MTBE	MA / CMR 310.40.1600 / S1 (mg/kg)	ND	0.44	0.1	0.1	mg/Kg
BY00818	\$VPHMS-SM	Naphthalene	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	5.0	4.0	4	4	mg/Kg
BY00818	\$VPHMS-SM	MTBE	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	ND	0.44	0.1	0.1	mg/Kg
BY00818	\$VPHRANGE-S C9-C12 Aliphatic Hydrocarbons *1,3		MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	1900	110	1000	1000	mg/Kg
BY00818	\$VPHRANGE-S C5-C8 Aliphatic Hydrocarbons *1,2		MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	1700	110	100	100	mg/Kg
BY00818	\$VPHRANGE-S C9-C10 Aromatic Hydrocarbons *1		MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	640	110	100	100	mg/Kg

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

MassDEP Analytical Protocol Certification Form

Laboratory Name: Phoenix Environmental Laboratories, Inc. **Project #:**

Project Location: 103 WASHINGTON ST SOMERVILLE **RTN:**

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]
BY00816, BY00817, BY00818, BY00819

Matrices: ☐ Groundwater/Surface Water ☒ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below)

8260 VOC CAM II A ☒	7470/7471 Hg CAM III B ☐	MassDEP VPH CAM IV A ☒	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
8270 SVOC CAM II B ☐	7010 Metals CAM III C ☐	MassDEP EPH CAM IV B ☒	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☐	6020 Metals CAM III D ☐	8082 PCB CAM V A ☐	9012 Total Cyanide/PAC CAM V1 A ☐	6860 Perchlorate CAM VIII B ☐	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature*) in the field or laboratory, and prepared/analyzed with method holding times? (* see narrative)	☒ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☒ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☒ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☒ Yes ☐ No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?	☒ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☒ Yes ☐ No

Responses to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☐ Yes ☒ No
Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350		
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	☒ Yes ☐ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes ☒ No

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Authorized
Signature:



Date: Monday, April 17, 2017

Printed Name: Ethan Lee

Position: Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

April 17, 2017

SDG I.D.: GBY00816

SDG Comments

8260 Volatile Organics:

The following compounds from the MCP 8260 analyte list were not performed: TAME, diethyl ether, diisopropyl ether, 1,4 dioxane, and ETBE.

BY00818 - Sample(s) required a dilution for Volatiles due to the presence of target and/or non-target compounds. This resulted in elevated reporting limits that exceed the requested criteria for one or more analytes.

EPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

AU-FID3 04/11/17-1

Adam Werner, Chemist 04/11/17

BY00819

No significant modifications were made to the EPH method, as specified in Section 11.3 of the method.

The initial calibration (AL0116AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (AR0116BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 25% except for the following compounds: None.

QC (Batch Specific):

Batch 382124 (BX96823)

BY00819

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 25% with the following exceptions: None.
Additional EPH fractionation criteria: Breakthrough criteria (BT) is 0 to 5%

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

PAH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

CHEM29 04/09/17-1

Damien Drobinski, Chemist 04/09/17

BY00819

Initial Calibration Verification (CHEM29/BN_0406):

100% of target compounds met criteria.

The following compounds had %RSDs >20%: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM29/0409_02-BN_0406) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

100% of target compounds met criteria.

The following compounds did not meet % deviation criteria: None.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

April 17, 2017

SDG I.D.: GBY00816

PAH Narration

The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 381964 (BY01078)

BY00819

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

CHEM14 04/07/17-2

Jane Li, Chemist 04/07/17

BY00816, BY00817, BY00818

Initial Calibration Verification (CHEM14/VT-0403):

99% of target compounds met criteria.

The following compounds had %RSDs >20%: Chloroethane 23% (20%)

The following compounds did not meet recommended response factors: None.

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM14/0407_31-VT-0403) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

96% of target compounds met criteria.

The following compounds did not meet % deviation criteria: Chloromethane 22%L (20%), Dichlorodifluoromethane 31%L (20%), Methylene chloride 22%L (20%)

The following compounds did not meet maximum % deviations: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet minimum response factors: None.

CHEM18 04/08/17-1

Jane Li, Chemist 04/08/17

BY00816

Initial Calibration Verification (CHEM18/VT-M0406):

98% of target compounds met criteria.

The following compounds had %RSDs >20%: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM18/0408M04-VT-M0406) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

96% of target compounds met criteria.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

April 17, 2017

SDG I.D.: GBY00816

VOA Narration

The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 382071 (BY00933)

BY00816, BY00817, BY00818

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

Batch 382098 (BY01080)

BY00816

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

PIDFID 04/12/17-2

Caleb Githinji, Chemist 04/12/17

BY00817, BY00818

A seven level calibration was performed. All RSDs were within limits.
The continuing calibration standards were within control limits.

The continuing calibration %D for the compound list was less than 25% except for the following compounds: None.

QC (Batch Specific):

Batch 382772 (BY00817)

BY00817, BY00818

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

April 17, 2017

SDG I.D.: GBY00816

VPH Narration

obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



EPH Fractionation Standard

SDGI.D.: GBY00816

Effective Date(s): 01/20/17 - 01/01/18

Analyst: aw

AS #	TV	20mL	21mL	22mL	23mL	% Rec1	% Rec2	% Rec3	% Rec4	Rec Limits
2-Methylnaphthalene bt	0	0.00	0.00	0.00	0.00					
Napthalene bt	0	0.00	0.00	0.00	0.00					
C9 - Nonane	40	14.16	13.44	14.60	13.58	35.4	33.6	36.5	34.0	30-140
C-10 Decane	40	18.58	17.78	19.05	18.21	46.4	44.4	47.6	45.5	40-140
Napthalene	40	25.00	25.87	25.43	23.37	62.5	64.7	63.6	58.4	40-140
2-Methylnaphthalene	40	26.18	27.21	26.46	24.31	65.5	68.0	66.2	60.8	40-140
C12 - Dodecane	40	21.43	21.27	22.65	21.97	53.6	53.2	56.6	54.9	40-140
C9-C18 Aliphatic Group	240	133.52	131.41	135.35	133.85	55.6	54.8	56.4	55.8	40-140
2-Fluorobiphenyl (surr)	20	15.59	16.75	15.98	14.87	78.0	83.7	79.9	74.3	40-140
Breakthrough	0	0.00	0.00	0.00	0.00					
Acenaphthalene	40	26.99	28.33	27.19	25.25	67.5	70.8	68.0	63.1	40-140
2-Bromonaphthalene (Surr)	20	15.51	17.08	16.16	15.13	77.6	85.4	80.8	75.7	40-140
Acenaphthene	40	27.34	28.74	27.36	25.19	68.3	71.9	68.4	63.0	40-140
C14 - Tetradecane	40	25.33	25.23	25.97	25.89	63.3	63.1	64.9	64.7	40-140
Fluorene	40	29.58	30.79	29.05	26.90	73.9	77.0	72.6	67.2	40-140
Spike Compounds Group 1										
C16 - Hexadecane	40	27.5	2.71	2.80	2.77					
Aliphatic Targets										
Anthracene	40	30.03	30.93	28.67	26.54	75.1	77.3	71.7	66.4	40-140
Phenanthrene	40	29.81	30.51	28.45	26.26	74.5	76.3	71.1	65.7	40-140
o-Terphenyl (surr)	40	30.30	30.45	28.44	26.38	75.8	76.1	71.1	65.9	40-140
C18 - Octadecane	40	29.31	29.07	28.72	29.44	73.3	72.7	71.8	73.6	40-140
Fluoranthene	40	29.51	29.40	27.35	25.33	73.8	73.5	68.4	63.3	40-140
C19 - Nonadecane	40	28.35	28.26	27.75	28.57	70.9	70.6	69.4	71.4	40-140
Spike Compounds Group 2										
Pyrene	40	35.00	34.99	31.43	27.52	87.5	87.5	78.6	68.8	40-140
C11-C22 Aromatic Hydrocar	680	576.30	579.98	540.89	491.06	84.8	85.3	79.5	72.2	40-140
C20 - Eicosane	40	28.79	28.34	27.75	28.58	72.0	70.9	69.4	71.5	40-140
o-COD (surr)	40	26.22	24.31	25.01	27.50	65.6	60.8	62.5	68.8	40-140
C22 - Docosane	40	28.69	28.28	27.49	28.29	71.7	70.7	68.7	70.7	40-140
Benzo(a)anthracene	40	31.36	31.63	27.93	25.35	78.4	79.1	69.8	63.4	40-140
Chrysene	40	28.76	27.61	27.17	25.12	71.9	69.0	67.9	62.8	40-140



EPH Fractionation Standard

SDGI.D.: GBY00816

Effective Date(s): 01/20/17 - 01/01/18

Analyst: aw

AS #	TV	20mL	21mL	22mL	23mL	% Rec1	% Rec2	% Rec3	% Rec4	Rec Limits
C24 - Tetracosane	40	28.24	27.89	26.87	27.59	70.6	69.7	67.2	69.0	40-140
Benzo(b/k)fluoranthene (c	80	59.97	59.71	55.02	50.90	75.0	74.6	68.8	63.6	40-140
Benzo(a)pyrene	40	30.21	29.62	27.67	25.89	75.5	74.1	69.2	64.7	40-140
C26 - Hexacosane	40	27.79	27.46	26.48	27.15	69.5	68.7	66.2	67.9	40-140
C28 - Octacosane	40	28.29	28.00	27.03	27.67	70.7	70.0	67.6	69.2	40-140
C19-C36 Aliphatic Group	320	253.33	245.48	237.44	244.19	79.2	76.7	74.2	76.3	40-140
Indeno/Dibenz(copk)	80	59.66	58.60	54.83	50.67	74.6	73.3	68.5	63.3	40-140
Benzo(ghi)perylene	40	29.70	29.23	27.40	25.33	74.3	73.1	68.5	63.3	40-140
C30 - Tricotane	40	27.67	27.52	26.51	27.13	69.2	68.8	66.3	67.8	40-140
C36 - Hexatriacontane	40	27.90	28.85	27.67	28.15	69.7	72.1	69.2	70.4	40-140

Notes: 40ppb (LCS) MAEPH fractionation test. 1-20ml hex, 2-21ml hex, 3-22ml hex, 4-23ml hex. 40-140% rec for all compounds except C-9 which is 30-140% Lot #:110916-990086



Friday, April 21, 2017

Attn: John Beck
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Project ID: 103 WASHINGTON ST SOMERVILLE
Sample ID#s: BY03127 - BY03132

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Phyllis Shiller".

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



SDG Comments

April 21, 2017

SDG I.D.: GBY03127

8260 Analysis:

1,2-Dibromoethane doesn't meet GW-1 criteria, this compound is analyzed by GC/FID to achieve this criteria.

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 21, 2017

FOR: Attn: John Beck
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: GROUND WATER
Location Code: IESINC
Rush Request: Standard
P.O.#:

Custody Information

Collected by: JB
Received by: SW
Analyzed by: see "By" below

Date

04/11/17
04/12/17

Time

10:55
16:04

Laboratory Data

SDG ID: GBY03127
Phoenix ID: BY03127

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: IES-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver (Dissolved)	< 0.001	0.001	mg/L	1	04/13/17	LK	SW6010C
Arsenic (Dissolved)	< 0.004	0.004	mg/L	1	04/13/17	LK	SW6010C
Barium (Dissolved)	0.084	0.002	mg/L	1	04/13/17	LK	SW6010C
Cadmium (Dissolved)	< 0.001	0.001	mg/L	1	04/13/17	LK	SW6010C
Chromium (Dissolved)	< 0.001	0.001	mg/L	1	04/13/17	LK	SW6010C
Mercury (Dissolved)	< 0.0002	0.0002	mg/L	1	04/19/17	RS	SW7470A
Lead (Dissolved)	< 0.002	0.002	mg/L	1	04/13/17	LK	SW6010C
Selenium (Dissolved)	0.013	0.011	mg/L	1	04/13/17	MA	E200.7-4.4
Mercury Dissolved Digestion	Completed				04/18/17	QW/W	SW7470A
EPH Extraction	Completed				04/14/17	I/I	SW3510C
MA Petroleum Hydrocarbon (EPH)	Completed				04/12/17		MADEP EPH-04
Semi-Volatile Extraction	Completed				04/13/17	P/D/I	SW3520C
Dissolved Metals Preparation	Completed				04/12/17	AG	SW3005A
MA Petroleum Hydrocarbon (VPH)	Completed				04/14/17	CG	MADEP VPH04

Volatiles

1,1,1,2-Tetrachloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1,1-Trichloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L	1	04/13/17	MH	SW8260C
1,1,2-Trichloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1-Dichloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1-Dichloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1-Dichloropropene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,3-Trichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,3-Trichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,4-Trichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,4-Trimethylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dibromo-3-chloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,2-Dibromoethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dichloroethane	ND	0.0006	mg/L	1	04/13/17	MH	SW8260C
1,2-Dichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,3,5-Trimethylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,3-Dichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,3-Dichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,4-Dichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
2,2-Dichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
2-Chlorotoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
2-Hexanone	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
2-Isopropyltoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
4-Chlorotoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
4-Methyl-2-pentanone	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Acetone	ND	0.025	mg/L	1	04/13/17	MH	SW8260C
Acrylonitrile	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Benzene	ND	0.0007	mg/L	1	04/13/17	MH	SW8260C
Bromobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Bromochloromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Bromodichloromethane	ND	0.0005	mg/L	1	04/13/17	MH	SW8260C
Bromoform	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Bromomethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Carbon Disulfide	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Carbon tetrachloride	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chloroform	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chloromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
cis-1,2-Dichloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
cis-1,3-Dichloropropene	ND	0.0004	mg/L	1	04/13/17	MH	SW8260C
Dibromochloromethane	ND	0.0005	mg/L	1	04/13/17	MH	SW8260C
Dibromomethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Dichlorodifluoromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Ethylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Hexachlorobutadiene	ND	0.0004	mg/L	1	04/13/17	MH	SW8260C
Isopropylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
m&p-Xylene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Methyl ethyl ketone	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Methyl t-butyl ether (MTBE)	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Methylene chloride	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Naphthalene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
n-Butylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
n-Propylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
o-Xylene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
p-Isopropyltoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
sec-Butylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Styrene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
tert-Butylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Tetrachloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Tetrahydrofuran (THF)	ND	0.0025	mg/L	1	04/13/17	MH	SW8260C
Toluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Total Xylenes	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
trans-1,2-Dichloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
trans-1,3-Dichloropropene	ND	0.0004	mg/L	1	04/13/17	MH	SW8260C
trans-1,4-dichloro-2-butene	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Trichloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Trichlorofluoromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Trichlorotrifluoroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Vinyl chloride	ND	0.001	mg/L	1	04/13/17	MH	SW8260C

QA/QC Surrogates

% 1,2-dichlorobenzene-d4	101		%	1	04/13/17	MH	70 - 130 %
% Bromofluorobenzene	91		%	1	04/13/17	MH	70 - 130 %
% Dibromofluoromethane	104		%	1	04/13/17	MH	70 - 130 %
% Toluene-d8	100		%	1	04/13/17	MH	70 - 130 %

Semivolatiles by SIM

2-Methylnaphthalene	ND	0.0001	mg/L	1	04/17/17	DD	SW8270D (SIM)
Acenaphthene	ND	0.0001	mg/L	1	04/17/17	DD	SW8270D (SIM)
Acenaphthylene	ND	0.0001	mg/L	1	04/17/17	DD	SW8270D (SIM)
Anthracene	ND	0.0001	mg/L	1	04/17/17	DD	SW8270D (SIM)
Benz(a)anthracene	ND	0.00002	mg/L	1	04/17/17	DD	SW8270D (SIM)
Benzo(a)pyrene	ND	0.00002	mg/L	1	04/17/17	DD	SW8270D (SIM)
Benzo(b)fluoranthene	ND	0.00002	mg/L	1	04/17/17	DD	SW8270D (SIM)
Benzo(ghi)perylene	ND	0.0001	mg/L	1	04/17/17	DD	SW8270D (SIM)
Benzo(k)fluoranthene	ND	0.00002	mg/L	1	04/17/17	DD	SW8270D (SIM)
Chrysene	ND	0.00002	mg/L	1	04/17/17	DD	SW8270D (SIM)
Dibenz(a,h)anthracene	ND	0.00001	mg/L	1	04/17/17	DD	SW8270D (SIM)
Fluoranthene	ND	0.0001	mg/L	1	04/17/17	DD	SW8270D (SIM)
Fluorene	ND	0.0001	mg/L	1	04/17/17	DD	SW8270D (SIM)
Indeno(1,2,3-cd)pyrene	ND	0.00002	mg/L	1	04/17/17	DD	SW8270D (SIM)
Naphthalene	0.00015	0.0001	mg/L	1	04/17/17	DD	SW8270D (SIM)
Phenanthrene	ND	0.00007	mg/L	1	04/17/17	DD	SW8270D (SIM)
Pyrene	ND	0.0001	mg/L	1	04/17/17	DD	SW8270D (SIM)

QA/QC Surrogates

% 2-Fluorobiphenyl	66		%	1	04/17/17	DD	30 - 130 %
% Nitrobenzene-d5	58		%	1	04/17/17	DD	30 - 130 %
% Terphenyl-d14	82		%	1	04/17/17	DD	30 - 130 %

MA EPH Aliphatic/Aromatic Ranges

C11-C22 Aromatic Hydrocarbons 1,2*	ND	0.1	mg/L	1	04/14/17	AW	MAEPH 5/2004
C19-C36 Aliphatic Hydrocarbons 1*	ND	0.1	mg/L	1	04/14/17	AW	MAEPH 5/2004
C9-C18 Aliphatic Hydrocarbons 1*	ND	0.1	mg/L	1	04/14/17	AW	MAEPH 5/2004
Total TPH 1,2*	ND	0.1	mg/L	1	04/14/17	AW	MAEPH 5/2004

QA/QC Surrogates

% 1-chlorooctadecane (aliphatic)	96		%	1	04/14/17	AW	40 - 140 %
% 2-Bromonaphthalene (Fractionation)	104		%	1	04/14/17	AW	40 - 140 %
% 2-Fluorobiphenyl (Fractionation)	111		%	1	04/14/17	AW	40 - 140 %
% o-terphenyl (aromatic)	88		%	1	04/14/17	AW	40 - 140 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
MA Volatile Petroleum Hydrocarbons (VPH)							
Unadjusted C5-C8 Aliphatics (*1)	ND	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	ND	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
C5-C8 Aliphatic Hydrocarbons *1,2	ND	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	ND	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	ND	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
Benzene	ND	0.001	mg/L	1	04/14/17	CG	MA VPH 5/2004
Ethyl Benzene	ND	0.001	mg/L	1	04/14/17	CG	MA VPH 5/2004
MTBE	ND	0.005	mg/L	1	04/14/17	CG	MA VPH 5/2004
Naphthalene	ND	0.005	mg/L	1	04/14/17	CG	MA VPH 5/2004
Toluene	ND	0.001	mg/L	1	04/14/17	CG	MA VPH 5/2004
m,p-Xylenes	ND	0.002	mg/L	1	04/14/17	CG	MA VPH 5/2004
o-Xylene	ND	0.001	mg/L	1	04/14/17	CG	MA VPH 5/2004
QA/QC Surrogates							
% 2,5-Dibromotoluene (PID)	92		%	1	04/14/17	CG	70 - 130 %
% 2,5-Dibromotoluene (FID)	105		%	1	04/14/17	CG	70 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

MAEPH:

1* Hydrocarbon range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.

2* C11-C12 Aromatic Hydrocarbons exclude the concentration of Target PAH analytes eluting in that range.

VPH:

*1 Range data exclude conc.s of any surrogate(s) and/or Int. std.s eluting in that range.

*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.

*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbon

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

April 21, 2017

Reviewed and Released by: Maryam Taylor, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 21, 2017

FOR: Attn: John Beck
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: GROUND WATER
Location Code: IESINC
Rush Request: Standard
P.O.#:

Custody Information

Collected by: JB
Received by: SW
Analyzed by: see "By" below

Date

04/11/17
04/12/17

Time

11:30
16:04

Laboratory Data

SDG ID: GBY03127
Phoenix ID: BY03128

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: IES-5

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
<u>Volatiles</u>							
1,1,1,2-Tetrachloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1,1-Trichloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L	1	04/13/17	MH	SW8260C
1,1,2-Trichloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1-Dichloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1-Dichloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1-Dichloropropene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,3-Trichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,3-Trichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,4-Trichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,4-Trimethylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dibromo-3-chloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dibromoethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dichloroethane	ND	0.0006	mg/L	1	04/13/17	MH	SW8260C
1,2-Dichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,3,5-Trimethylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,3-Dichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,3-Dichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,4-Dichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
2,2-Dichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
2-Chlorotoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
2-Hexanone	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
2-Isopropyltoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
4-Chlorotoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
4-Methyl-2-pentanone	ND	0.005	mg/L	1	04/13/17	MH	SW8260C

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Acetone	ND	0.025	mg/L	1	04/13/17	MH	SW8260C
Acrylonitrile	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Benzene	ND	0.0007	mg/L	1	04/13/17	MH	SW8260C
Bromobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Bromochloromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Bromodichloromethane	ND	0.0005	mg/L	1	04/13/17	MH	SW8260C
Bromoform	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Bromomethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Carbon Disulfide	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Carbon tetrachloride	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chloroform	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chloromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
cis-1,2-Dichloroethene	0.018	0.001	mg/L	1	04/13/17	MH	SW8260C
cis-1,3-Dichloropropene	ND	0.0004	mg/L	1	04/13/17	MH	SW8260C
Dibromochloromethane	ND	0.0005	mg/L	1	04/13/17	MH	SW8260C
Dibromomethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Dichlorodifluoromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Ethylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Hexachlorobutadiene	ND	0.0004	mg/L	1	04/13/17	MH	SW8260C
Isopropylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
m&p-Xylene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Methyl ethyl ketone	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Methyl t-butyl ether (MTBE)	0.0016	0.001	mg/L	1	04/13/17	MH	SW8260C
Methylene chloride	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Naphthalene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
n-Butylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
n-Propylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
o-Xylene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
p-Isopropyltoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
sec-Butylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Styrene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
tert-Butylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Tetrachloroethene	0.2	0.01	mg/L	10	04/15/17	MH	SW8260C
Tetrahydrofuran (THF)	ND	0.0025	mg/L	1	04/13/17	MH	SW8260C
Toluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Total Xylenes	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
trans-1,2-Dichloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
trans-1,3-Dichloropropene	ND	0.0004	mg/L	1	04/13/17	MH	SW8260C
trans-1,4-dichloro-2-butene	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Trichloroethene	0.046	0.005	mg/L	10	04/15/17	MH	SW8260C
Trichlorofluoromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Trichlorotrifluoroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Vinyl chloride	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	101		%	1	04/13/17	MH	70 - 130 %
% Bromofluorobenzene	91		%	1	04/13/17	MH	70 - 130 %
% Dibromofluoromethane	99		%	1	04/13/17	MH	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Toluene-d8	103		%	1	04/13/17	MH	70 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

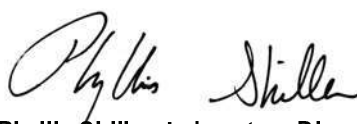
Comments:

Volatile Comment:

Where the LOD justifies lowering the RL/PQL, the RL/PQL of some compounds are evaluated below the lowest calibration standard in order to meet criteria.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

April 21, 2017

Reviewed and Released by: Maryam Taylor, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 21, 2017

FOR: Attn: John Beck
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: GROUND WATER
Location Code: IESINC
Rush Request: Standard
P.O.#:

Custody Information

Collected by: JB
Received by: SW
Analyzed by: see "By" below

Date

04/11/17
04/12/17

Time

11:50
16:04

Laboratory Data

SDG ID: GBY03127
Phoenix ID: BY03129

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: IES-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
MA Petroleum Hydrocarbon (VPH)	Completed				04/14/17	CG	MADEP VPH04

MA Volatile Petroleum Hydrocarbons (VPH)

Unadjusted C5-C8 Aliphatics (*1)	ND	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	ND	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
C5-C8 Aliphatic Hydrocarbons *1,2	ND	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	ND	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	ND	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
Benzene	ND	0.001	mg/L	1	04/14/17	CG	MA VPH 5/2004
Ethyl Benzene	ND	0.001	mg/L	1	04/14/17	CG	MA VPH 5/2004
MTBE	ND	0.005	mg/L	1	04/14/17	CG	MA VPH 5/2004
Naphthalene	ND	0.005	mg/L	1	04/14/17	CG	MA VPH 5/2004
Toluene	ND	0.001	mg/L	1	04/14/17	CG	MA VPH 5/2004
m,p-Xylenes	ND	0.002	mg/L	1	04/14/17	CG	MA VPH 5/2004
o-Xylene	ND	0.001	mg/L	1	04/14/17	CG	MA VPH 5/2004

QA/QC Surrogates

% 2,5-Dibromotoluene (PID)	92	%	1	04/14/17	CG	70 - 130 %
% 2,5-Dibromotoluene (FID)	106	%	1	04/14/17	CG	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

VPH:

*1 Range data exclude conc.s of any surrogate(s) and/or Int. std.s eluting in that range.

*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.

*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbon

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

April 21, 2017

Reviewed and Released by: Maryam Taylor, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 21, 2017

FOR: Attn: John Beck
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: GROUND WATER
Location Code: IESINC
Rush Request: Standard
P.O.#:

Custody Information

Collected by: JB
Received by: SW
Analyzed by: see "By" below

Date

04/11/17
04/12/17

Time

12:20
16:04

Laboratory Data

SDG ID: GBY03127
Phoenix ID: BY03130

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: IES-4

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
EPH Extraction	Completed				04/13/17	p/d/l	SW3510C
MA Petroleum Hydrocarbon (EPH)	Completed				04/12/17		MADEP EPH-04
Semi-Volatile Extraction	Completed				04/13/17	P/D/I	SW3520C
MA Petroleum Hydrocarbon (VPH)	Completed				04/14/17	CG	MADEP VPH04

Semivolatiles by SIM

2-Methylnaphthalene	0.014	0.00011	mg/L	1	04/17/17	DD	SW8270D (SIM)
Acenaphthene	ND	0.00011	mg/L	1	04/14/17	DD	SW8270D (SIM)
Acenaphthylene	ND	0.00011	mg/L	1	04/14/17	DD	SW8270D (SIM)
Anthracene	ND	0.00011	mg/L	1	04/14/17	DD	SW8270D (SIM)
Benz(a)anthracene	0.00009	0.00002	mg/L	1	04/14/17	DD	SW8270D (SIM)
Benzo(a)pyrene	0.00009	0.00002	mg/L	1	04/14/17	DD	SW8270D (SIM)
Benzo(b)fluoranthene	0.00017	0.00002	mg/L	1	04/14/17	DD	SW8270D (SIM)
Benzo(ghi)perylene	0.00016	0.00011	mg/L	1	04/14/17	DD	SW8270D (SIM)
Benzo(k)fluoranthene	0.00012	0.00002	mg/L	1	04/14/17	DD	SW8270D (SIM)
Chrysene	0.00018	0.00002	mg/L	1	04/14/17	DD	SW8270D (SIM)
Dibenz(a,h)anthracene	0.00005	0.00001	mg/L	1	04/14/17	DD	SW8270D (SIM)
Fluoranthene	0.00015	0.00011	mg/L	1	04/14/17	DD	SW8270D (SIM)
Fluorene	ND	0.00011	mg/L	1	04/14/17	DD	SW8270D (SIM)
Indeno(1,2,3-cd)pyrene	0.00013	0.00002	mg/L	1	04/14/17	DD	SW8270D (SIM)
Naphthalene	0.033	0.00011	mg/L	1	04/17/17	DD	SW8270D (SIM)
Phenanthrene	0.00017	0.00008	mg/L	1	04/14/17	DD	SW8270D (SIM)
Pyrene	0.00023	0.00011	mg/L	1	04/14/17	DD	SW8270D (SIM)

QA/QC Surrogates

% 2-Fluorobiphenyl	66		%	1	04/14/17	DD	30 - 130 %
% Nitrobenzene-d5	80		%	1	04/14/17	DD	30 - 130 %
% Terphenyl-d14	57		%	1	04/14/17	DD	30 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
MA EPH Aliphatic/Aromatic Ranges							
C11-C22 Aromatic Hydrocarbons 1,2*	ND	0.11	mg/L	1	04/18/17	AW	MAEPH 5/2004
C19-C36 Aliphatic Hydrocarbons 1*	ND	0.11	mg/L	1	04/18/17	AW	MAEPH 5/2004
C9-C18 Aliphatic Hydrocarbons 1*	ND	0.11	mg/L	1	04/18/17	AW	MAEPH 5/2004
Total TPH 1,2*	ND	0.11	mg/L	1	04/18/17	AW	MAEPH 5/2004
QA/QC Surrogates							
% 1-chlorooctadecane (aliphatic)	NR		%	1	04/18/17	AW	40 - 140 %
% 2-Bromonaphthalene (Fractionation)	Interference		%	1	04/18/17	AW	40 - 140 %
% 2-Fluorobiphenyl (Fractionation)	67		%	1	04/18/17	AW	40 - 140 %
% o-terphenyl (aromatic)	NR		%	1	04/18/17	AW	40 - 140 %
MA Volatile Petroleum Hydrocarbons (VPH)							
Unadjusted C5-C8 Aliphatics (*1)	1.1	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	2.2	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
C5-C8 Aliphatic Hydrocarbons *1,2	0.92	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	1.3	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	0.84	0.1	mg/L	1	04/14/17	CG	MA VPH 5/2004
Benzene	0.012	0.001	mg/L	1	04/14/17	CG	MA VPH 5/2004
Ethyl Benzene	0.063	0.001	mg/L	1	04/14/17	CG	MA VPH 5/2004
MTBE	ND	0.005	mg/L	1	04/14/17	CG	MA VPH 5/2004
Naphthalene	0.069	0.005	mg/L	1	04/14/17	CG	MA VPH 5/2004
Toluene	0.0043	0.001	mg/L	1	04/14/17	CG	MA VPH 5/2004
m,p-Xylenes	0.049	0.002	mg/L	1	04/14/17	CG	MA VPH 5/2004
o-Xylene	0.0098	0.001	mg/L	1	04/14/17	CG	MA VPH 5/2004
QA/QC Surrogates							
% 2,5-Dibromotoluene (PID)	98		%	1	04/14/17	CG	70 - 130 %
% 2,5-Dibromotoluene (FID)	111		%	1	04/14/17	CG	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

MAEPH:

1* Hydrocarbon range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.

2* C11-C12 Aromatic Hydrocarbons exclude the concentration of Target PAH analytes eluting in that range.

VPH:

*1 Range data exclude conc.s of any surrogate(s) and/or Int. std.s eluting in that range.

*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.

*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbon

EPH Comment

Due to insufficient sample, SV extract was used for EPH analysis. No EPH surrogates were added.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

April 21, 2017

Reviewed and Released by: Maryam Taylor, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 21, 2017

FOR: Attn: John Beck
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: GROUND WATER
Location Code: IESINC
Rush Request: Standard
P.O.#:

Custody Information

Collected by: JB
Received by: SW
Analyzed by: see "By" below

Date

04/11/17
04/12/17

Time

13:10
16:04

Laboratory Data

SDG ID: GBY03127
Phoenix ID: BY03131

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: IES-6

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
<u>Volatiles</u>							
1,1,1,2-Tetrachloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1,1-Trichloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L	1	04/13/17	MH	SW8260C
1,1,2-Trichloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1-Dichloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1-Dichloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1-Dichloropropene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,3-Trichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,3-Trichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,4-Trichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,4-Trimethylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dibromo-3-chloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dibromoethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dichloroethane	ND	0.0006	mg/L	1	04/13/17	MH	SW8260C
1,2-Dichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,3,5-Trimethylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,3-Dichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,3-Dichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,4-Dichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
2,2-Dichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
2-Chlorotoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
2-Hexanone	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
2-Isopropyltoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
4-Chlorotoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
4-Methyl-2-pentanone	ND	0.005	mg/L	1	04/13/17	MH	SW8260C

Client ID: IES-6

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Acetone	0.047	S 0.025	mg/L	2	04/15/17	MH	SW8260C
Acrylonitrile	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Benzene	ND	0.0007	mg/L	1	04/13/17	MH	SW8260C
Bromobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Bromochloromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Bromodichloromethane	ND	0.0005	mg/L	1	04/13/17	MH	SW8260C
Bromoform	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Bromomethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Carbon Disulfide	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Carbon tetrachloride	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chloroform	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chloromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
cis-1,2-Dichloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
cis-1,3-Dichloropropene	ND	0.0004	mg/L	1	04/13/17	MH	SW8260C
Dibromochloromethane	ND	0.0005	mg/L	1	04/13/17	MH	SW8260C
Dibromomethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Dichlorodifluoromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Ethylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Hexachlorobutadiene	ND	0.0004	mg/L	1	04/13/17	MH	SW8260C
Isopropylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
m&p-Xylene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Methyl ethyl ketone	0.0085	0.005	mg/L	1	04/13/17	MH	SW8260C
Methyl t-butyl ether (MTBE)	0.0098	0.001	mg/L	1	04/13/17	MH	SW8260C
Methylene chloride	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Naphthalene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
n-Butylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
n-Propylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
o-Xylene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
p-Isopropyltoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
sec-Butylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Styrene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
tert-Butylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Tetrachloroethene	0.0035	0.001	mg/L	1	04/13/17	MH	SW8260C
Tetrahydrofuran (THF)	ND	0.0025	mg/L	1	04/13/17	MH	SW8260C
Toluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Total Xylenes	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
trans-1,2-Dichloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
trans-1,3-Dichloropropene	ND	0.0004	mg/L	1	04/13/17	MH	SW8260C
trans-1,4-dichloro-2-butene	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Trichloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Trichlorofluoromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Trichlorotrifluoroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Vinyl chloride	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
<u>QA/QC Surrogates</u>							
% 1,2-dichlorobenzene-d4	100		%	1	04/13/17	MH	70 - 130 %
% Bromofluorobenzene	93		%	1	04/13/17	MH	70 - 130 %
% Dibromofluoromethane	99		%	1	04/13/17	MH	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Toluene-d8	98		%	1	04/13/17	MH	70 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

S - Laboratory solvent, contamination is possible.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

April 21, 2017

Reviewed and Released by: Maryam Taylor, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 21, 2017

FOR: Attn: John Beck
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: GROUND WATER
Location Code: IESINC
Rush Request: Standard
P.O.#:

Custody Information

Collected by: JB
Received by: SW
Analyzed by: see "By" below

Date

04/11/17
04/12/17

Time

10:30
16:04

Laboratory Data

SDG ID: GBY03127
Phoenix ID: BY03132

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: EQUIPMENT BLANK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
<u>Volatiles</u>							
1,1,1,2-Tetrachloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1,1-Trichloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L	1	04/13/17	MH	SW8260C
1,1,2-Trichloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1-Dichloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1-Dichloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,1-Dichloropropene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,3-Trichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,3-Trichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,4-Trichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2,4-Trimethylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dibromo-3-chloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dibromoethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,2-Dichloroethane	ND	0.0006	mg/L	1	04/13/17	MH	SW8260C
1,2-Dichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,3,5-Trimethylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,3-Dichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,3-Dichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
1,4-Dichlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
2,2-Dichloropropane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
2-Chlorotoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
2-Hexanone	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
2-Isopropyltoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
4-Chlorotoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
4-Methyl-2-pentanone	ND	0.005	mg/L	1	04/13/17	MH	SW8260C

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Acetone	ND	0.025	mg/L	1	04/13/17	MH	SW8260C
Acrylonitrile	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Benzene	ND	0.0007	mg/L	1	04/13/17	MH	SW8260C
Bromobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Bromochloromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Bromodichloromethane	ND	0.0005	mg/L	1	04/13/17	MH	SW8260C
Bromoform	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Bromomethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Carbon Disulfide	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Carbon tetrachloride	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chlorobenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chloroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chloroform	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Chloromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
cis-1,2-Dichloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
cis-1,3-Dichloropropene	ND	0.0004	mg/L	1	04/13/17	MH	SW8260C
Dibromochloromethane	ND	0.0005	mg/L	1	04/13/17	MH	SW8260C
Dibromomethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Dichlorodifluoromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Ethylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Hexachlorobutadiene	ND	0.0004	mg/L	1	04/13/17	MH	SW8260C
Isopropylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
m&p-Xylene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Methyl ethyl ketone	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Methyl t-butyl ether (MTBE)	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Methylene chloride	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Naphthalene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
n-Butylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
n-Propylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
o-Xylene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
p-Isopropyltoluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
sec-Butylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Styrene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
tert-Butylbenzene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Tetrachloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Tetrahydrofuran (THF)	ND	0.0025	mg/L	1	04/13/17	MH	SW8260C
Toluene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Total Xylenes	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
trans-1,2-Dichloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
trans-1,3-Dichloropropene	ND	0.0004	mg/L	1	04/13/17	MH	SW8260C
trans-1,4-dichloro-2-butene	ND	0.005	mg/L	1	04/13/17	MH	SW8260C
Trichloroethene	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Trichlorofluoromethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Trichlorotrifluoroethane	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
Vinyl chloride	ND	0.001	mg/L	1	04/13/17	MH	SW8260C
<u>QA/QC Surrogates</u>							
% 1,2-dichlorobenzene-d4	98		%	1	04/13/17	MH	70 - 130 %
% Bromofluorobenzene	85		%	1	04/13/17	MH	70 - 130 %
% Dibromofluoromethane	99		%	1	04/13/17	MH	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Toluene-d8	97		%	1	04/13/17	MH	70 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

April 21, 2017

Reviewed and Released by: Maryam Taylor, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

April 21, 2017

QA/QC Data

SDG I.D.: GBY03127

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 382403 (mg/L), QC Sample No: BY01967 (BY03127)													
<u>ICP Metals - Dissolved</u>													
Arsenic	BRL	0.004	0.0041	<0.004	NC	93.7			93.0			75 - 125	20
Barium	BRL	0.002	0.010	0.010	0	96.4			94.5			75 - 125	20
Cadmium	BRL	0.001	<0.001	<0.001	NC	97.6			94.5			75 - 125	20
Chromium	BRL	0.001	<0.001	<0.001	NC	94.3			92.9			75 - 125	20
Lead	BRL	0.002	<0.001	<0.002	NC	95.5			93.3			75 - 125	20
Selenium	BRL	0.011	0.006	<0.011	NC	90.2			89.2			75 - 125	20
Silver	BRL	0.001	<0.001	<0.001	NC	89.5			88.3			75 - 125	20
QA/QC Batch 383243 (mg/L), QC Sample No: BY03127 (BY03127)													
Mercury (Dissolved)	BRL	0.0002	<0.0002	<0.0003	NC	90.9			85.2			75 - 125	30
Comment:													
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%													



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

April 21, 2017

QA/QC Data

SDG I.D.: GBY03127

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 382190 (ug/L), QC Sample No: BY00811 (BY03127, BY03130)										
MAEPH - Ground Water										
C11-C22 Aromatic Hydrocarbons 1	ND	100	74	69	7.0				40 - 140	25
C19-C36 Aliphatic Hydrocarbons 1*	ND	100	77	94	19.9				40 - 140	25
C9-C18 Aliphatic Hydrocarbons 1*	ND	100	59	68	14.2				40 - 140	25
Total TPH 1,2*	ND	100	72	75	4.1				40 - 140	25
% 1-chlorooctadecane (aliphatic)	103	%	99	115	15.0				40 - 140	25
% 2-Bromonaphthalene (Fractionati	63	%	91	65	33.3				40 - 140	25
% 2-Fluorobiphenyl (Fractionation)	91	%	110	93	16.7				40 - 140	25
% o-terphenyl (aromatic)	109	%	106	97	8.9				40 - 140	25

Comment:

Additional EPH fractionation criteria: Breakthrough criteria (BT) is 0 to 5%

QA/QC Batch 382881 (ug/L), QC Sample No: BY01337 (BY03127, BY03129, BY03130)

Volatile Petroleum Hydrocarbons - Ground Water

Unadjusted C5-C8 Aliphatics (*1)	ND	100	108	111	2.7	86	98	13.0	70 - 130	20
Unadjusted C9-C12 Aliphatics (*1)	ND	100	101	105	3.9	76	94	21.2	70 - 130	20
C5-C8 Aliphatic Hydrocarbons *1,2	ND	100	108	111	2.7	86	98	13.0	70 - 130	20
C9-C12 Aliphatic Hydrocarbons *1,	ND	100	101	105	3.9	75	93	21.4	70 - 130	20
C9-C10 Aromatic Hydrocarbons *1	ND	100	91	92	1.1	68	81	17.4	70 - 130	20
Benzene	ND	1.0	89	90	1.1	70	82	15.8	70 - 130	20
Ethyl Benzene	ND	1.0	89	90	1.1	70	82	15.8	70 - 130	20
MTBE	ND	1.0	87	88	1.1	66	78	16.7	70 - 130	20
Naphthalene	ND	5.0	93	90	3.3	70	84	18.2	70 - 130	20
Toluene	ND	1.0	89	91	2.2	70	82	15.8	70 - 130	20
m,p-Xylenes	ND	2.0	89	90	1.1	70	82	15.8	70 - 130	20
o-Xylene	ND	1.0	89	90	1.1	69	81	16.0	70 - 130	20
% 2,5-Dibromotoluene (PID)	85		87	86	1.2	94	93	1.1	70 - 130	20
% 2,5-Dibromotoluene (FID)	97	%	99	97	2.0	107	105	1.9	70 - 130	20

QA/QC Batch 382882 (ug/L), QC Sample No: BY03132 (BY03127, BY03128, BY03131, BY03132)

Volatiles - Ground Water

1,1,1,2-Tetrachloroethane	ND	1.0	116	118	1.7				70 - 130	30
1,1,1-Trichloroethane	ND	1.0	132	129	2.3				70 - 130	30
1,1,2,2-Tetrachloroethane	ND	0.50	116	117	0.9				70 - 130	30
1,1,2-Trichloroethane	ND	1.0	107	110	2.8				70 - 130	30
1,1-Dichloroethane	ND	1.0	124	123	0.8				70 - 130	30
1,1-Dichloroethene	ND	1.0	129	129	0.0				70 - 130	30
1,1-Dichloropropene	ND	1.0	128	145	12.5				70 - 130	30
1,2,3-Trichlorobenzene	ND	1.0	105	106	0.9				70 - 130	30
1,2,3-Trichloropropane	ND	1.0	106	107	0.9				70 - 130	30
1,2,4-Trichlorobenzene	ND	1.0	112	114	1.8				70 - 130	30
1,2,4-Trimethylbenzene	ND	1.0	107	108	0.9				70 - 130	30
1,2-Dibromo-3-chloropropane	ND	1.0	98	102	4.0				70 - 130	30

QA/QC Data

SDG I.D.: GBY03127

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
1,2-Dibromoethane	ND	1.0	109	111	1.8				70 - 130	30
1,2-Dichlorobenzene	ND	1.0	114	114	0.0				70 - 130	30
1,2-Dichloroethane	ND	1.0	106	109	2.8				70 - 130	30
1,2-Dichloropropane	ND	1.0	115	116	0.9				70 - 130	30
1,3,5-Trimethylbenzene	ND	1.0	118	120	1.7				70 - 130	30
1,3-Dichlorobenzene	ND	1.0	117	117	0.0				70 - 130	30
1,3-Dichloropropane	ND	1.0	109	112	2.7				70 - 130	30
1,4-Dichlorobenzene	ND	1.0	115	112	2.6				70 - 130	30
2,2-Dichloropropane	ND	1.0	139	136	2.2				70 - 130	30
2-Chlorotoluene	ND	1.0	120	122	1.7				70 - 130	30
2-Hexanone	ND	5.0	82	85	3.6				40 - 160	30
2-Isopropyltoluene	ND	1.0	105	109	3.7				70 - 130	30
4-Chlorotoluene	ND	1.0	120	119	0.8				70 - 130	30
4-Methyl-2-pentanone	ND	5.0	85	88	3.5				40 - 160	30
Acetone	ND	5.0	85	84	1.2				40 - 160	30
Acrylonitrile	ND	5.0	99	99	0.0				70 - 130	30
Benzene	ND	0.70	103	105	1.9				70 - 130	30
Bromobenzene	ND	1.0	115	118	2.6				70 - 130	30
Bromochloromethane	ND	1.0	114	117	2.6				70 - 130	30
Bromodichloromethane	ND	0.50	112	115	2.6				70 - 130	30
Bromoform	ND	1.0	103	105	1.9				70 - 130	30
Bromomethane	ND	1.0	94	101	7.2				40 - 160	30
Carbon Disulfide	ND	1.0	124	125	0.8				70 - 130	30
Carbon tetrachloride	ND	1.0	141	137	2.9				70 - 130	30
Chlorobenzene	ND	1.0	114	116	1.7				70 - 130	30
Chloroethane	ND	1.0	120	120	0.0				70 - 130	30
Chloroform	ND	1.0	123	123	0.0				70 - 130	30
Chloromethane	ND	1.0	111	110	0.9				40 - 160	30
cis-1,2-Dichloroethene	ND	1.0	117	118	0.9				70 - 130	30
cis-1,3-Dichloropropene	ND	0.40	113	115	1.8				70 - 130	30
Dibromochloromethane	ND	0.50	112	115	2.6				70 - 130	30
Dibromomethane	ND	1.0	106	110	3.7				70 - 130	30
Dichlorodifluoromethane	ND	1.0	115	112	2.6				40 - 160	30
Ethylbenzene	ND	1.0	107	109	1.9				70 - 130	30
Hexachlorobutadiene	ND	0.40	111	116	4.4				70 - 130	30
Isopropylbenzene	ND	1.0	123	127	3.2				70 - 130	30
m&p-Xylene	ND	1.0	104	108	3.8				70 - 130	30
Methyl ethyl ketone	ND	5.0	101	106	4.8				40 - 160	30
Methyl t-butyl ether (MTBE)	ND	1.0	105	103	1.9				70 - 130	30
Methylene chloride	ND	1.0	114	114	0.0				70 - 130	30
Naphthalene	ND	1.0	114	117	2.6				70 - 130	30
n-Butylbenzene	ND	1.0	114	121	6.0				70 - 130	30
n-Propylbenzene	ND	1.0	119	122	2.5				70 - 130	30
o-Xylene	ND	1.0	113	115	1.8				70 - 130	30
p-Isopropyltoluene	ND	1.0	117	121	3.4				70 - 130	30
sec-Butylbenzene	ND	1.0	119	124	4.1				70 - 130	30
Styrene	ND	1.0	118	121	2.5				70 - 130	30
tert-Butylbenzene	ND	1.0	118	122	3.3				70 - 130	30
Tetrachloroethene	ND	1.0	117	119	1.7				70 - 130	30
Tetrahydrofuran (THF)	ND	2.5	87	84	3.5				70 - 130	30
Toluene	ND	1.0	104	105	1.0				70 - 130	30
trans-1,2-Dichloroethene	ND	1.0	124	122	1.6				70 - 130	30
trans-1,3-Dichloropropene	ND	0.40	106	111	4.6				70 - 130	30

QA/QC Data

SDG I.D.: GBY03127

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
trans-1,4-dichloro-2-butene	ND	5.0	90	90	0.0				70 - 130	30
Trichloroethene	ND	1.0	120	119	0.8				70 - 130	30
Trichlorofluoromethane	ND	1.0	124	122	1.6				70 - 130	30
Trichlorotrifluoroethane	ND	1.0	116	118	1.7				70 - 130	30
Vinyl chloride	ND	1.0	118	117	0.9				70 - 130	30
% 1,2-dichlorobenzene-d4	102	%	100	101	1.0				70 - 130	30
% Bromofluorobenzene	89	%	98	100	2.0				70 - 130	30
% Dibromofluoromethane	107	%	99	101	2.0				70 - 130	30
% Toluene-d8	100	%	101	101	0.0				70 - 130	30

Comment:

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

QA/QC Batch 382746 (ug/L), QC Sample No: BY03251 (BY03127, BY03130)

Semivolatiles by SIM - Ground Water

2-Methylnaphthalene	ND	0.05	76	72	5.4	73	61	17.9	30 - 130	30
Acenaphthene	ND	0.05	81	78	3.8	76	63	18.7	30 - 130	30
Acenaphthylene	ND	0.04	83	79	4.9	72	61	16.5	30 - 130	30
Anthracene	ND	0.02	87	85	2.3	76	65	15.6	30 - 130	30
Benz(a)anthracene	ND	0.02	80	78	2.5	77	63	20.0	30 - 130	30
Benzo(a)pyrene	ND	0.02	80	78	2.5	66	51	25.6	30 - 130	30
Benzo(b)fluoranthene	ND	0.02	80	82	2.5	78	62	22.9	30 - 130	30
Benzo(ghi)perylene	ND	0.02	93	92	1.1	75	58	25.6	30 - 130	30
Benzo(k)fluoranthene	ND	0.02	85	80	6.1	76	59	25.2	30 - 130	30
Chrysene	ND	0.02	78	75	3.9	83	67	21.3	30 - 130	30
Dibenz(a,h)anthracene	ND	0.01	96	95	1.0	82	61	29.4	30 - 130	30
Fluoranthene	ND	0.04	88	86	2.3	81	70	14.6	30 - 130	30
Fluorene	ND	0.05	84	82	2.4	79	67	16.4	30 - 130	30
Indeno(1,2,3-cd)pyrene	ND	0.02	93	93	0.0	77	58	28.1	30 - 130	30
Naphthalene	ND	0.05	68	64	6.1	56	47	17.5	30 - 130	30
Phenanthrene	ND	0.05	79	78	1.3	76	66	14.1	30 - 130	30
Pyrene	ND	0.02	90	87	3.4	83	71	15.6	30 - 130	30
% 2-Fluorobiphenyl	66	%	71	70	1.4	68	56	19.4	30 - 130	30
% Nitrobenzene-d5	67	%	69	66	4.4	60	49	20.2	30 - 130	30
% Terphenyl-d14	91	%	94	92	2.2	84	68	21.1	30 - 130	30

Comment:

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

QA/QC Batch 383115 (ug/L), QC Sample No: BY03805 (BY03128 (10X) , BY03131 (2X))

Volatiles - Ground Water

Acetone	ND	5.0	91	99	8.4	98	117	17.7	40 - 160	30
Tetrachloroethene	ND	1.0	98	113	14.2	108	115	6.3	70 - 130	30
Trichloroethene	ND	1.0	99	112	12.3	103	114	10.1	70 - 130	30

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.

m = This parameter is outside laboratory MS/MSD specified recovery limits.

r = This parameter is outside laboratory RPD specified recovery limits.

QA/QC Data

SDG I.D.: GBY03127

Parameter	Blank		LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
		RL								

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference



Phyllis Shiller, Laboratory Director
April 21, 2017

Friday, April 21, 2017

Criteria: MA: CAM, GW2

State: MA

Sample Criteria Exceedances Report

GBY03127 - IESINC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL	Analysis Units
BY03127	\$8260GWR	Acrylonitrile	MA / CAM Protocol / VOA AQ RL	ND	0.005		0.002	mg/L
BY03127	\$8260GWR	Carbon Disulfide	MA / CAM Protocol / VOA AQ RL	ND	0.005		0.002	mg/L
BY03127	\$8260GWR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA AQ RL	ND	0.0025		0.002	mg/L
BY03127	\$8260GWR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA AQ RL	ND	0.005		0.002	mg/L
BY03127	\$8260GWR	Acetone	MA / CAM Protocol / VOA AQ RL	ND	0.025		0.01	mg/L
BY03128	\$8260GWR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA AQ RL	ND	0.005		0.002	mg/L
BY03128	\$8260GWR	Acetone	MA / CAM Protocol / VOA AQ RL	ND	0.025		0.01	mg/L
BY03128	\$8260GWR	Acrylonitrile	MA / CAM Protocol / VOA AQ RL	ND	0.005		0.002	mg/L
BY03128	\$8260GWR	Carbon Disulfide	MA / CAM Protocol / VOA AQ RL	ND	0.005		0.002	mg/L
BY03128	\$8260GWR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA AQ RL	ND	0.0025		0.002	mg/L
BY03128	\$8260GWR	Tetrachloroethene	MA / GROUNDWATER STANDARDS / GW-2	0.2	0.01	0.05	0.05	mg/L
BY03128	\$8260GWR	Trichloroethene	MA / GROUNDWATER STANDARDS / GW-2	0.046	0.005	0.005	0.005	mg/L
BY03131	\$8260GWR	Acrylonitrile	MA / CAM Protocol / VOA AQ RL	ND	0.005		0.002	mg/L
BY03131	\$8260GWR	Carbon Disulfide	MA / CAM Protocol / VOA AQ RL	ND	0.005		0.002	mg/L
BY03131	\$8260GWR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA AQ RL	ND	0.0025		0.002	mg/L
BY03131	\$8260GWR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA AQ RL	ND	0.005		0.002	mg/L
BY03132	\$8260GWR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA AQ RL	ND	0.005		0.002	mg/L
BY03132	\$8260GWR	Acetone	MA / CAM Protocol / VOA AQ RL	ND	0.025		0.01	mg/L
BY03132	\$8260GWR	Acrylonitrile	MA / CAM Protocol / VOA AQ RL	ND	0.005		0.002	mg/L
BY03132	\$8260GWR	Carbon Disulfide	MA / CAM Protocol / VOA AQ RL	ND	0.005		0.002	mg/L
BY03132	\$8260GWR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA AQ RL	ND	0.0025		0.002	mg/L

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

MassDEP Analytical Protocol Certification Form

Laboratory Name: Phoenix Environmental Laboratories, Inc. **Project #:**

Project Location: 103 WASHINGTON ST SOMERVILLE **RTN:**

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

BY03127, BY03128, BY03129, BY03130, BY03131, BY03132

Matrices: ☒ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below)

8260 VOC CAM II A ☒	7470/7471 Hg CAM III B ☒	MassDEP VPH CAM IV A ☒	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
8270 SVOC CAM II B ☒	7010 Metals CAM III C ☐	MassDEP EPH CAM IV B ☒	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☒	6020 Metals CAM III D ☐	8082 PCB CAM V A ☐	9012 Total Cyanide/PAC CAM V1 A ☐	6860 Perchlorate CAM VIII B ☐	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature*) in the field or laboratory, and prepared/analyzed with method holding times? (* see narrative)	☒ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☒ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☒ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☒ Yes ☐ No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?	☐ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☒ Yes ☐ No

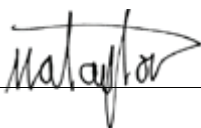
Responses to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☐ Yes ☒ No
Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350		
H	Were all QC performance standards specified in the CAM protocol(s) achieved? See Sections: EPH, VOA Narrations .	☐ Yes ☒ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes ☒ No

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Authorized
Signature: _____



Date: Friday, April 21, 2017

Printed Name: Maryam Taylor

Position: Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

April 21, 2017

SDG I.D.: GBY03127

SDG Comments

Metals Analysis:

The client requested a shorter list of elements than the 6010 MCP list. Only the RCRA 8 Metals are reported as requested on the chain of custody.

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

BLUE 04/13/17 10:56

Laura Kinnin, Mike Arsenault, Chemist 04/13/17

BY03127

The linear range is defined daily by the calibration range.

The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.

The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

EPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 382190 (Samples: BY03127, BY03130): -----

The LCS/LCSD RPD exceeds the method criteria for one or more surrogates. Both recoveries are within limits. No significant bias is suspected. (% 2-Bromonaphthalene (Fractionation))

Instrument:

AU-FID3 04/18/17-1

Adam Werner, Chemist 04/18/17

BY03130

No significant modifications were made to the EPH method, as specified in Section 11.3 of the method.

The initial calibration (AL0116AI) RSD for the compound list was less than 20% except for the following compounds: None.

The initial calibration (AR0116BI) RSD for the compound list was less than 20% except for the following compounds: None.

The continuing calibration %D for the compound list was less than 25% except for the following compounds: None.

DUAL FID1 04/14/17-1

Adam Werner, Chemist 04/14/17

BY03127

The initial calibration (AL0316AI) RSD for the compound list was less than 20% except for the following compounds: None.

The initial calibration (AR0316BI) RSD for the compound list was less than 20% except for the following compounds: None.

The continuing calibration %D for the compound list was less than 25% except for the following compounds: None.

QC (Batch Specific):

Batch 382190 (BY00811)

BY03127, by03130

All LCS recoveries were within 40 - 140 with the following exceptions: None.

All LCSD recoveries were within 40 - 140 with the following exceptions: None.

All LCS/LCSD RPDs were less than 25% with the following exceptions: % 2-Bromonaphthalene (Fractionation)(33.3%)

Additional EPH fractionation criteria: Breakthrough criteria (BT) is 0 to 5%



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

April 21, 2017

SDG I.D.: GBY03127

EPH Narration

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Mercury Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

MERLIN 04/19/17 10:58

Rick Schweitzer, Chemist 04/19/17

BY03127

The method preparation blank contains all of the acids and reagents as the samples; the instrument blanks do not.

The initial calibration met all criteria including a standard run at or below the reporting level.

All calibration verification standards (ICV, CCV) met criteria.

All calibration blank verification standards (ICB, CCB) met criteria.

The matrix spike sample is used to identify spectral interference for each batch of samples, if within 85-115%, no interference is observed and no further action is taken.

The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.

The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 383243 (BY03127)

BY03127

All LCS recoveries were within 75 - 125 with the following exceptions: None.

Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%

SVOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

CHEM29 04/17/17-1

Damien Drobinski, Chemist 04/17/17

BY03130

Initial Calibration Verification (CHEM29/SV_0413):

97% of target compounds met criteria.

The following compounds had %RSDs >20%: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM29/0417_02-SV_0413) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

98% of target compounds met criteria.

The following compounds did not meet % deviation criteria: None.

The following compounds did not meet maximum % deviations: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet minimum response factors: None.

QC (Batch Specific):



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

April 21, 2017

SDG I.D.: GBY03127

SVOA Narration

Batch 382746 (BY03251)

BY03127, BY03130

All LCS recoveries were within 30 - 130 with the following exceptions: None.

All LCSD recoveries were within 30 - 130 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

SVOASIM Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

CHEM07 04/14/17-1

Damien Drobinski, Chemist 04/14/17

BY03130

Initial Calibration Verification (CHEM07/SIM_0406):

96% of target compounds met criteria.

The following compounds had %RSDs >20%: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM07/0414_09-SIM_0406) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

100% of target compounds met criteria.

The following compounds did not meet % deviation criteria: None.

The following compounds did not meet maximum % deviations: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet minimum response factors: None.

CHEM07 04/17/17-1

Damien Drobinski, Chemist 04/17/17

BY03127

Initial Calibration Verification (CHEM07/SIM_0406):

96% of target compounds met criteria.

The following compounds had %RSDs >20%: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM07/0417_02-SIM_0406) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

94% of target compounds met criteria.

The following compounds did not meet % deviation criteria: None.

The following compounds did not meet maximum % deviations: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet minimum response factors: None.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

April 21, 2017

SDG I.D.: GBY03127

SVOASIM Narration

QC (Batch Specific):

Batch 382746 (BY03251)

BY03127, BY03130

All LCS recoveries were within 30 - 130 with the following exceptions: None.

All LCSD recoveries were within 30 - 130 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 382882 (Samples: BY03127, BY03128, BY03131, BY03132): -----

The LCS and/or the LCSD recovery is above the upper range for one or more analytes that were not reported in the sample(s), therefore no significant bias is suspected. (1,1,1-Trichloroethane, 1,1-Dichloropropene, 2,2-Dichloropropane, Carbon tetrachloride)

Instrument:

CHEM02 04/15/17-1

Michael Hahn, Chemist 04/15/17

BY03128, BY03131

Initial Calibration Verification (CHEM02/VT-P0414):

95% of target compounds met criteria.

The following compounds had %RSDs >20%: None.

The following compounds did not meet recommended response factors: Acetone 0.042 (0.1)

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM02/0415P02-VT-P0414) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

95% of target compounds met criteria.

The following compounds did not meet % deviation criteria: Acetone 24%L (20%)

The following compounds did not meet maximum % deviations: None.

The following compounds did not meet recommended response factors: Acetone 0.032 (0.1)

The following compounds did not meet minimum response factors: None.

CHEM17 04/13/17-1

Michael Hahn, Chemist 04/13/17

BY03127, BY03128, BY03131, BY03132

Initial Calibration Verification (CHEM17/VT-S0412):

95% of target compounds met criteria.

The following compounds had %RSDs >20%: Benzene 27% (20%), Ethylbenzene 22% (20%), m&p-Xylene 23% (20%), Toluene 24% (20%)

The following compounds did not meet recommended response factors: 1,2-Dibromo-3-chloropropane 0.044 (0.05), Acetone 0.050 (0.1), Methyl ethyl ketone 0.096 (0.1), Tetrahydrofuran (THF) 0.046 (0.05)



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

April 21, 2017

SDG I.D.: GBY03127

VOA Narration

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM17/0413S02-VT-S0412) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

95% of target compounds met criteria.

The following compounds did not meet % deviation criteria: Acetone 22%L (20%), Bromomethane 34%L (20%), Methyl ethyl ketone 35%L (20%), Tetrahydrofuran (THF) 22%L (20%)

The following compounds did not meet maximum % deviations: None.

The following compounds did not meet recommended response factors: 1,2-Dibromo-3-chloropropane 0.036 (0.05), 2-Hexanone 0.091 (0.1), Acetone 0.039 (0.1), Acrylonitrile 0.049 (0.05), Bromoform 0.089 (0.1), Methyl ethyl ketone 0.062 (0.1), Tetrahydrofuran (THF) 0.036 (0.05)

The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 382882 (BY03132)

BY03127, BY03128, BY03131, BY03132

All LCS recoveries were within 70 - 130 with the following exceptions: 1,1,1-Trichloroethane(132%), 2,2-Dichloropropane(139%), Carbon tetrachloride(141%)

All LCSD recoveries were within 70 - 130 with the following exceptions: 1,1-Dichloropropene(145%), 2,2-Dichloropropane(136%), Carbon tetrachloride(137%)

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

Batch 383115 (BY03805)

BY03128, BY03131

All LCS recoveries were within 70 - 130 with the following exceptions: None.

All LCSD recoveries were within 70 - 130 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

PIDFID 04/12/17-3

Caleb Githinji, Chemist 04/12/17

BY03127, BY03129, BY03130

A seven level calibration was performed. All RSDs were within limits.

The continuing calibration standards were within control limits.

The continuing calibration %D for the compound list was less than 25% except for the following compounds: None.

QC (Batch Specific):



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

April 21, 2017

SDG I.D.: GBY03127

VPH Narration

Batch 382881 (BY01337)

BY03127, BY03129, BY03130

All LCS recoveries were within 70 - 130 with the following exceptions: None.

All LCSD recoveries were within 70 - 130 with the following exceptions: None.

All LCS/LCSD RPDs were less than 20% with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



EPH Fractionation Standard

SDGI.D.: GBY03127

Effective Date(s): 01/20/17 - 01/01/18

Analyst: aw

AS #	TV	20mL	21mL	22mL	23mL	% Rec1	% Rec2	% Rec3	% Rec4	Rec Limits
2-Methylnaphthalene bt	0	0.00	0.00	0.00	0.00					
Naphthalene bt	0	0.00	0.00	0.00	0.00					
C9 - Nonane	40	14.16	13.44	14.60	13.58	35.4	33.6	36.5	34.0	30-140
C-10 Decane	40	18.58	17.78	19.05	18.21	46.4	44.4	47.6	45.5	40-140
Napthalene	40	25.00	25.87	25.43	23.37	62.5	64.7	63.6	58.4	40-140
2-Methylnaphthalene	40	26.18	27.21	26.46	24.31	65.5	68.0	66.2	60.8	40-140
C12 - Dodecane	40	21.43	21.27	22.65	21.97	53.6	53.2	56.6	54.9	40-140
C9-C18 Aliphatic Group	240	133.52	131.41	135.35	133.85	55.6	54.8	56.4	55.8	40-140
2-Fluorobiphenyl (surr)	20	15.59	16.75	15.98	14.87	78.0	83.7	79.9	74.3	40-140
Breakthrough	0	0.00	0.00	0.00	0.00					
Acenaphthalene	40	26.99	28.33	27.19	25.25	67.5	70.8	68.0	63.1	40-140
2-Bromonaphthalene (Surr)	20	15.51	17.08	16.16	15.13	77.6	85.4	80.8	75.7	40-140
Acenaphthene	40	27.34	28.74	27.36	25.19	68.3	71.9	68.4	63.0	40-140
C14 - Tetradecane	40	25.33	25.23	25.97	25.89	63.3	63.1	64.9	64.7	40-140
Fluorene	40	29.58	30.79	29.05	26.90	73.9	77.0	72.6	67.2	40-140
Spike Compounds Group 1										
C16 - Hexadecane	40	27.5	2.71	2.80	2.77					
Aliphatic Targets										
Anthracene	40	30.03	30.93	28.67	26.54	75.1	77.3	71.7	66.4	40-140
Phenanthrene	40	29.81	30.51	28.45	26.26	74.5	76.3	71.1	65.7	40-140
o-Terphenyl (surr)	40	30.30	30.45	28.44	26.38	75.8	76.1	71.1	65.9	40-140
C18 - Octadecane	40	29.31	29.07	28.72	29.44	73.3	72.7	71.8	73.6	40-140
Fluoranthene	40	29.51	29.40	27.35	25.33	73.8	73.5	68.4	63.3	40-140
C19 - Nonadecane	40	28.35	28.26	27.75	28.57	70.9	70.6	69.4	71.4	40-140
Spike Compounds Group 2										
Pyrene	40	35.00	34.99	31.43	27.52	87.5	87.5	78.6	68.8	40-140
C11-C22 Aromatic Hydrocar	680	576.30	579.98	540.89	491.06	84.8	85.3	79.5	72.2	40-140
C20 - Eicosane	40	28.79	28.34	27.75	28.58	72.0	70.9	69.4	71.5	40-140
o-COD (surr)	40	26.22	24.31	25.01	27.50	65.6	60.8	62.5	68.8	40-140
C22 - Docosane	40	28.69	28.28	27.49	28.29	71.7	70.7	68.7	70.7	40-140
Benzo(a)anthracene	40	31.36	31.63	27.93	25.35	78.4	79.1	69.8	63.4	40-140
Chrysene	40	28.76	27.61	27.17	25.12	71.9	69.0	67.9	62.8	40-140



EPH Fractionation Standard

SDGI.D.: GBY03127

Effective Date(s): 01/20/17 - 01/01/18

Analyst: aw

AS #	TV	20mL	21mL	22mL	23mL	% Rec1	% Rec2	% Rec3	% Rec4	Rec Limits
C24 - Tetracosane	40	28.24	27.89	26.87	27.59	70.6	69.7	67.2	69.0	40-140
Benzo(b/k)fluoranthene (c	80	59.97	59.71	55.02	50.90	75.0	74.6	68.8	63.6	40-140
Benzo(a)pyrene	40	30.21	29.62	27.67	25.89	75.5	74.1	69.2	64.7	40-140
C26 - Hexacosane	40	27.79	27.46	26.48	27.15	69.5	68.7	66.2	67.9	40-140
C28 - Octacosane	40	28.29	28.00	27.03	27.67	70.7	70.0	67.6	69.2	40-140
C19-C36 Aliphatic Group	320	253.33	245.48	237.44	244.19	79.2	76.7	74.2	76.3	40-140
Indeno/Dibenz(copk)	80	59.66	58.60	54.83	50.67	74.6	73.3	68.5	63.3	40-140
Benzo(ghi)perylene	40	29.70	29.23	27.40	25.33	74.3	73.1	68.5	63.3	40-140
C30 - Tricotane	40	27.67	27.52	26.51	27.13	69.2	68.8	66.3	67.8	40-140
C36 - Hexatriacontane	40	27.90	28.85	27.67	28.15	69.7	72.1	69.2	70.4	40-140

Notes: 40ppb (LCS) MAEPH fractionation test. 1-20ml hex, 2-21ml hex, 3-22ml hex, 4-23ml hex. 40-140% rec for all compounds except C-9 which is 30-140% Lot #:110916-990086

CHAIN OF CUSTODY RECORD

687 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Client Services (860) 645-8726



PHOENIX
Environmental Laboratory

Cooler: Yes ☒ No ☐
Coolant: IPK ☐ ICE ☒ Pg. of

Data Delivery:

Fax # _____

☒ Email: jbeck@jesinc.com

Project P.O.:

103 Washington St. Somerville.

Report to: JOHN W BECK

Invoice to: **IES Inc**

Phone #: 617-623-8880 Cell: 617-623-8880

Fax # _____

This section MUST be completed with Bottle Quantities.

Client Sample Information - Identification

11/1/75

Matrix Code:
 DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
 RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe
 OIL=Oil B=Bulk L=Liquid

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled
0327	IES-1	GW	4/11/17	10:55
0328	IES-5	GW	4/11/17	11:30
0329	IES-2	GW	4/11/17	11:50
0330	IES-4	GW	4/11/17	12:20
0331	IES-6	GW	4/11/17	13:10
0332	Equipment Blank	GW	4/11/17	10:30

Analysis Request

Analysis Request

Relinquished by:	Accepted by:
------------------	--------------

Date:	Time:
-------	-------

RI

13

MA

Data Format

1

12.20

☐ Direct Exposure☐ RCP Cert☒ MCP Certification

Excel

Comments, Special Requirements or Regulations:

C_W-Z

NOTE: IES-4 - limited water - could only recover
one liter for EPH sample - Please
call JOHN DECK if this is a problem
979-387-6771

Turnaround:
☐ 1 Day*
☐ 2 Days*
☐ 3 Days*
☒ Standard
☐ Other

State where samples were collected:

* SURCHARGE APPLIES



Friday, September 15, 2017

Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Project ID: 103 WASHINGTON ST SOMERVILLE
Sample ID#s: BY99472 - BY99473

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Phyllis Shiller".

Phyllis Shiller

Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



SDG Comments

September 15, 2017

SDG I.D.: GBY99472

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

September 15, 2017

FOR: Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: 24 Hour
P.O.#:

Custody Information

Collected by:
Received by: SW
Analyzed by: see "By" below

Date

09/11/17

Time

11:30

09/12/17

15:30

Laboratory Data

SDG ID: GBY99472
Phoenix ID: BY99472

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: SOIL DISPOSAL S-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Arsenic	11.5	0.75	mg/Kg	1	09/13/17	MA	SW6010C
Cadmium	< 0.38	0.38	mg/Kg	1	09/13/17	MA	SW6010C
Chromium	51.2	0.38	mg/Kg	1	09/13/17	MA	SW6010C
Mercury	0.11	0.03	mg/Kg	1	09/13/17	RS	SW7471B
Lead	24.7	0.38	mg/Kg	1	09/13/17	MA	SW6010C
TCLP Lead	0.066	0.010	mg/L	1	09/13/17	MA	SW6010C
TCLP Metals Digestion	Completed				09/13/17	W/W	SW3005A
Percent Solid	83		%		09/12/17	Q	SW846-%Solid
Corrosivity	Negative		Pos/Neg	1	09/12/17	O	SW846-Corr
Flash Point	>200	200	Degree F	1	09/13/17	Y	SW1010A
Ignitability	Passed	140	degree F	1	09/13/17	Y	SW846-Ignit
pH at 25C - Soil	8.02	1.00	pH Units	1	09/12/17 18:40	O	SW9045
Reactivity Cyanide	< 6	6	mg/Kg	1	09/13/17	BS/GD	SW846-ReactCyn 7
Reactivity Sulfide	< 20	20	mg/Kg	1	09/13/17	BS/GD	SW-7.3 7
Reactivity	Negative		Pos/Neg	1	09/13/17	BS/GD	SW846-React 7
Soil Extraction for PCB	Completed				09/12/17	JJ/V	SW3545A
Mercury Digestion	Completed				09/13/17	W/W	SW7471B
TCLP Extraction for Metals	Completed				09/12/17	W	SW1311
Total Metals Digest	Completed				09/12/17	B/AG	SW3050B
Extraction of TPH SM	Completed				09/12/17	JC/VCK	SW3545A

Polychlorinated Biphenyls

PCB-1016	ND	0.078	mg/Kg	2	09/13/17	AW	SW8082A
PCB-1221	ND	0.078	mg/Kg	2	09/13/17	AW	SW8082A
PCB-1232	ND	0.078	mg/Kg	2	09/13/17	AW	SW8082A
PCB-1242	ND	0.078	mg/Kg	2	09/13/17	AW	SW8082A
PCB-1248	ND	0.078	mg/Kg	2	09/13/17	AW	SW8082A
PCB-1254	0.17	0.078	mg/Kg	2	09/13/17	AW	SW8082A

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
PCB-1260	ND	0.078	mg/Kg	2	09/13/17	AW	SW8082A
PCB-1262	ND	0.078	mg/Kg	2	09/13/17	AW	SW8082A
PCB-1268	ND	0.078	mg/Kg	2	09/13/17	AW	SW8082A
<u>QA/QC Surrogates</u>							
% DCBP	87		%	2	09/13/17	AW	30 - 150 %
% TCMX	88		%	2	09/13/17	AW	30 - 150 %

TPH by GC (Extractable Products)

Fuel Oil #2 / Diesel Fuel	ND	59	mg/kg	1	09/13/17	JRB	SW8015D DRO
Fuel Oil #4	ND	59	mg/kg	1	09/13/17	JRB	SW8015D DRO
Fuel Oil #6	ND	59	mg/kg	1	09/13/17	JRB	SW8015D DRO
Kerosene	ND	59	mg/kg	1	09/13/17	JRB	SW8015D DRO
Motor Oil	ND	59	mg/kg	1	09/13/17	JRB	SW8015D DRO
Other Oil	**	59	mg/kg	1	09/13/17	JRB	SW8015D DRO
Unidentified	99	59	mg/kg	1	09/13/17	JRB	SW8015D DRO

QA/QC Surrogates

% n-Pentacosane	84		%	1	09/13/17	JRB	50 - 150 %
-----------------	----	--	---	---	----------	-----	------------

Volatiles

1,1,1,2-Tetrachloroethane	ND	0.1	mg/Kg	50	09/13/17	JLI	SW8260C
1,1,1-Trichloroethane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.062	mg/Kg	50	09/13/17	JLI	SW8260C
1,1,2-Trichloroethane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
1,1-Dichloroethane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
1,1-Dichloroethene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
1,1-Dichloropropene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
1,2,3-Trichloropropane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
1,2,4-Trichlorobenzene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
1,2,4-Trimethylbenzene	3.8	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
1,2-Dibromoethane	ND	0.1	mg/Kg	50	09/13/17	JLI	SW8260C
1,2-Dichlorobenzene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
1,2-Dichloroethane	ND	0.1	mg/Kg	50	09/13/17	JLI	SW8260C
1,2-Dichloropropane	ND	0.1	mg/Kg	50	09/13/17	JLI	SW8260C
1,3,5-Trimethylbenzene	1.1	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
1,3-Dichlorobenzene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
1,3-Dichloropropane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
1,4-Dichlorobenzene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
2,2-Dichloropropane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
2-Chlorotoluene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
2-Hexanone	ND	1.5	mg/Kg	50	09/13/17	JLI	SW8260C
2-Isopropyltoluene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
4-Chlorotoluene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
4-Methyl-2-pentanone	ND	1.5	mg/Kg	50	09/13/17	JLI	SW8260C
Acetone	ND	15	mg/Kg	50	09/13/17	JLI	SW8260C
Acrylonitrile	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Benzene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Bromobenzene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Bromochloromethane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Bromodichloromethane	ND	0.1	mg/Kg	50	09/13/17	JLI	SW8260C
Bromoform	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Bromomethane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Carbon Disulfide	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Carbon tetrachloride	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Chlorobenzene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Chloroethane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Chloroform	ND	0.2	mg/Kg	50	09/13/17	JLI	SW8260C
Chloromethane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
cis-1,2-Dichloroethene	ND	0.1	mg/Kg	50	09/13/17	JLI	SW8260C
cis-1,3-Dichloropropene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Dibromochloromethane	ND	0.062	mg/Kg	50	09/13/17	JLI	SW8260C
Dibromomethane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Dichlorodifluoromethane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Ethylbenzene	0.79	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Hexachlorobutadiene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Isopropylbenzene	0.21	0.21	mg/Kg	50	09/13/17	JLI	SW8260C
m&p-Xylene	0.54	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Methyl Ethyl Ketone	ND	1.8	mg/Kg	50	09/13/17	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	0.62	mg/Kg	50	09/13/17	JLI	SW8260C
Methylene chloride	ND	0.62	mg/Kg	50	09/13/17	JLI	SW8260C
Naphthalene	2.7	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
n-Butylbenzene	0.75	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
n-Propylbenzene	0.9	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
o-Xylene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
p-Isopropyltoluene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
sec-Butylbenzene	0.22	0.21	mg/Kg	50	09/13/17	JLI	SW8260C
Styrene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
tert-Butylbenzene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Tetrachloroethene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Tetrahydrofuran (THF)	ND	0.62	mg/Kg	50	09/13/17	JLI	SW8260C
Toluene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Total Xylenes	0.54	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
trans-1,2-Dichloroethene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
trans-1,3-Dichloropropene	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
trans-1,4-dichloro-2-butene	ND	0.62	mg/Kg	50	09/13/17	JLI	SW8260C
Trichloroethene	ND	0.3	mg/Kg	50	09/13/17	JLI	SW8260C
Trichlorofluoromethane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Trichlorotrifluoroethane	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
Vinyl chloride	ND	0.31	mg/Kg	50	09/13/17	JLI	SW8260C
<u>QA/QC Surrogates</u>							
% 1,2-dichlorobenzene-d4	97		%	50	09/13/17	JLI	70 - 130 %
% Bromofluorobenzene	103		%	50	09/13/17	JLI	70 - 130 %
% Dibromofluoromethane	99		%	50	09/13/17	JLI	70 - 130 %
% Toluene-d8	85		%	50	09/13/17	JLI	70 - 130 %
Field Extraction	Completed				09/11/17		SW5035A

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

7 = This parameter is not certified by MA for this matrix.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Corrosivity is based solely on the pH analysis performed above.

Ignitability is based solely on the results of the closed cup flashpoint analysis performed above. Passed is >140 degree F.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide. This method is no longer listed in the current version of SW-846.

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Sulfide. This method is no longer listed in the current version of SW-846.

Volatile Comment:

Elevated reporting limits for volatiles due to the presence of target and/or non-target compounds.

Volatile Comment:

Where the LOD justifies lowering the RL/PQL, the RL/PQL of some compounds are evaluated below the lowest calibration standard in order to meet criteria.

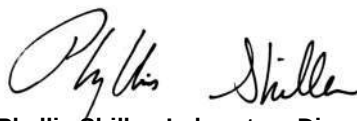
TPH Comment:

**Petroleum hydrocarbon chromatogram contains a multicomponent hydrocarbon distribution in the range of C9 to C36. The sample was quantitated against a C9-C36 alkane hydrocarbon standard.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

September 15, 2017

Reviewed and Released by: Maryam Taylor, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

September 15, 2017

FOR: Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: 24 Hour
P.O.#:

Custody Information

Collected by:
Received by: SW
Analyzed by: see "By" below

Date

09/11/17
09/12/17

Time

11:30
15:30

Laboratory Data

SDG ID: GBY99472
Phoenix ID: BY99473

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: SOIL DISPOSAL S-1A

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	82		%		09/12/17	Q	SW846-%Solid

Volatiles

1,1,1,2-Tetrachloroethane	ND	0.1	mg/Kg	50	09/13/17	JLI	SW8260C
1,1,1-Trichloroethane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.082	mg/Kg	50	09/13/17	JLI	SW8260C
1,1,2-Trichloroethane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
1,1-Dichloroethane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
1,1-Dichloroethene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
1,1-Dichloropropene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
1,2,3-Trichloropropane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
1,2,4-Trichlorobenzene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
1,2,4-Trimethylbenzene	4.1	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
1,2-Dibromoethane	ND	0.1	mg/Kg	50	09/13/17	JLI	SW8260C
1,2-Dichlorobenzene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
1,2-Dichloroethane	ND	0.1	mg/Kg	50	09/13/17	JLI	SW8260C
1,2-Dichloropropane	ND	0.1	mg/Kg	50	09/13/17	JLI	SW8260C
1,3,5-Trimethylbenzene	1.2	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
1,3-Dichlorobenzene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
1,3-Dichloropropane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
1,4-Dichlorobenzene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
2,2-Dichloropropane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
2-Chlorotoluene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
2-Hexanone	ND	2	mg/Kg	50	09/13/17	JLI	SW8260C
2-Isopropyltoluene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
4-Chlorotoluene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Methyl-2-pentanone	ND	2	mg/Kg	50	09/13/17	JLI	SW8260C
Acetone	ND	20	mg/Kg	50	09/13/17	JLI	SW8260C
Acrylonitrile	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Benzene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Bromobenzene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Bromochloromethane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Bromodichloromethane	ND	0.1	mg/Kg	50	09/13/17	JLI	SW8260C
Bromoform	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Bromomethane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Carbon Disulfide	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Carbon tetrachloride	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Chlorobenzene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Chloroethane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Chloroform	ND	0.2	mg/Kg	50	09/13/17	JLI	SW8260C
Chloromethane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
cis-1,2-Dichloroethene	ND	0.1	mg/Kg	50	09/13/17	JLI	SW8260C
cis-1,3-Dichloropropene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Dibromochloromethane	ND	0.082	mg/Kg	50	09/13/17	JLI	SW8260C
Dibromomethane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Dichlorodifluoromethane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Ethylbenzene	0.79	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Hexachlorobutadiene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Isopropylbenzene	0.21	0.21	mg/Kg	50	09/13/17	JLI	SW8260C
m&p-Xylene	0.63	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Methyl Ethyl Ketone	ND	2.4	mg/Kg	50	09/13/17	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	0.82	mg/Kg	50	09/13/17	JLI	SW8260C
Methylene chloride	ND	0.82	mg/Kg	50	09/13/17	JLI	SW8260C
Naphthalene	3.1	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
n-Butylbenzene	0.84	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
n-Propylbenzene	0.92	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
o-Xylene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
p-Isopropyltoluene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
sec-Butylbenzene	0.23	0.21	mg/Kg	50	09/13/17	JLI	SW8260C
Styrene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
tert-Butylbenzene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Tetrachloroethene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Tetrahydrofuran (THF)	ND	0.82	mg/Kg	50	09/13/17	JLI	SW8260C
Toluene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Total Xylenes	0.63	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
trans-1,2-Dichloroethene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
trans-1,3-Dichloropropene	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
trans-1,4-dichloro-2-butene	ND	0.82	mg/Kg	50	09/13/17	JLI	SW8260C
Trichloroethene	ND	0.3	mg/Kg	50	09/13/17	JLI	SW8260C
Trichlorofluoromethane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Trichlorotrifluoroethane	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
Vinyl chloride	ND	0.41	mg/Kg	50	09/13/17	JLI	SW8260C
<u>QA/QC Surrogates</u>							
% 1,2-dichlorobenzene-d4	97		%	50	09/13/17	JLI	70 - 130 %
% Bromofluorobenzene	102		%	50	09/13/17	JLI	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Dibromofluoromethane	92		%	50	09/13/17	JLI	70 - 130 %
% Toluene-d8	86		%	50	09/13/17	JLI	70 - 130 %
Field Extraction	Completed				09/11/17		SW5035A

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Volatile Comment:

Elevated reporting limits for volatiles due to the presence of target and/or non-target compounds.

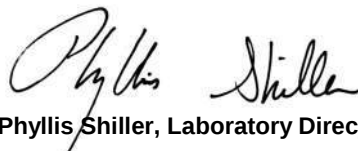
Volatile Comment:

Where the LOD justifies lowering the RL/PQL, the RL/PQL of some compounds are evaluated below the lowest calibration standard in order to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

September 15, 2017

Reviewed and Released by: Maryam Taylor, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

September 15, 2017

QA/QC Data

SDG I.D.: GBY99472

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 401122 (mg/L), QC Sample No: BY98529 (BY99472)													
<u>ICP Metals - TCLP Extraction</u>													
Lead	BRL	0.010	0.101	0.065	43.4	113			110			75 - 125	20 r
QA/QC Batch 401117 (mg/kg), QC Sample No: BY98869 (BY99472)													
Mercury - Soil	BRL	0.03	0.06	0.07	NC	98.7	106	7.1	116			75 - 125	20
Comment:													
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%													
QA/QC Batch 401045 (mg/kg), QC Sample No: BY99428 (BY99472)													
<u>ICP Metals - Soil</u>													
Arsenic	BRL	0.69	1.68	1.05	NC	94.2			84.9			75 - 125	30
Cadmium	BRL	0.35	0.41	<0.34	NC	91.9			86.8			75 - 125	30
Chromium	BRL	0.35	20.9	16.4	24.1	104			89.9			75 - 125	30
Lead	BRL	0.35	4.58	3.77	19.4	96.5			89.6			75 - 125	30

r = This parameter is outside laboratory RPD specified recovery limits.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

September 15, 2017

QA/QC Data

SDG I.D.: GBY99472

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 401192 (Degree F), QC Sample No: BY98873 (BY99472)													
Flash Point			>200	>200	NC	101						75 - 125	30
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 401092 (PH), QC Sample No: BY98873 (BY99472)													
pH at 25C - Soil			4.92	4.92	NC	100						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 401113 (mg/Kg), QC Sample No: BY99070 4.95X (BY99472)													
Reactivity Cyanide	BRL	0.05	<5	<5.2	NC	98.8						80 - 120	20
Comment:													
Additional soil criteria LCS acceptance range is 80-120% MS acceptance range 75-125%.													



Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045

Tel. (860) 645-1102

Fax (860) 645-0823

QA/QC Report

September 15, 2017

QA/QC Data

SDG I.D.: GBY99472

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 401132 (mg/Kg), QC Sample No: BY98873 (BY99472 (50X) , BY99473 (50X))										
Volatiles - Soil										
1,1,1,2-Tetrachloroethane	ND	0.005	105	107	1.9	110	102	7.5	70 - 130	30
1,1,1-Trichloroethane	ND	0.005	103	108	4.7	112	106	5.5	70 - 130	30
1,1,2,2-Tetrachloroethane	ND	0.003	109	116	6.2	141	127	10.4	70 - 130	30 m
1,1,2-Trichloroethane	ND	0.005	108	112	3.6	105	99	5.9	70 - 130	30
1,1-Dichloroethane	ND	0.005	105	105	0.0	118	108	8.8	70 - 130	30
1,1-Dichloroethene	ND	0.005	106	110	3.7	113	106	6.4	70 - 130	30
1,1-Dichloropropene	ND	0.005	108	115	6.3	107	103	3.8	70 - 130	30
1,2,3-Trichlorobenzene	ND	0.005	111	115	3.5	49	44	10.8	70 - 130	30 m
1,2,3-Trichloropropane	ND	0.005	100	105	4.9	127	113	11.7	70 - 130	30
1,2,4-Trichlorobenzene	ND	0.005	108	116	7.1	58	53	9.0	70 - 130	30 m
1,2,4-Trimethylbenzene	ND	0.001	109	110	0.9	97	92	5.3	70 - 130	30
1,2-Dibromo-3-chloropropane	ND	0.005	110	123	11.2	105	97	7.9	70 - 130	30
1,2-Dibromoethane	ND	0.005	107	110	2.8	107	99	7.8	70 - 130	30
1,2-Dichlorobenzene	ND	0.005	108	111	2.7	92	87	5.6	70 - 130	30
1,2-Dichloroethane	ND	0.005	107	110	2.8	105	101	3.9	70 - 130	30
1,2-Dichloropropane	ND	0.005	111	114	2.7	111	107	3.7	70 - 130	30
1,3,5-Trimethylbenzene	ND	0.001	110	113	2.7	103	96	7.0	70 - 130	30
1,3-Dichlorobenzene	ND	0.005	106	110	3.7	94	88	6.6	70 - 130	30
1,3-Dichloropropane	ND	0.005	103	106	2.9	110	102	7.5	70 - 130	30
1,4-Dichlorobenzene	ND	0.005	106	111	4.6	95	88	7.7	70 - 130	30
2,2-Dichloropropane	ND	0.005	105	106	0.9	107	105	1.9	70 - 130	30
2-Chlorotoluene	ND	0.005	112	115	2.6	117	107	8.9	70 - 130	30
2-Hexanone	ND	0.025	83	87	4.7	56	54	3.6	40 - 160	30
2-Isopropyltoluene	ND	0.005	99	102	3.0	81	75	7.7	70 - 130	30
4-Chlorotoluene	ND	0.005	108	110	1.8	108	101	6.7	70 - 130	30
4-Methyl-2-pentanone	ND	0.025	89	96	7.6	84	80	4.9	40 - 160	30
Acetone	ND	0.01	69	75	8.3	63	58	8.3	40 - 160	30
Acrylonitrile	ND	0.005	86	89	3.4	88	79	10.8	70 - 130	30
Benzene	ND	0.001	108	111	2.7	106	103	2.9	70 - 130	30
Bromobenzene	ND	0.005	111	115	3.5	118	108	8.8	70 - 130	30
Bromochloromethane	ND	0.005	100	105	4.9	109	100	8.6	70 - 130	30
Bromodichloromethane	ND	0.005	111	113	1.8	103	102	1.0	70 - 130	30
Bromoform	ND	0.005	102	106	3.8	93	88	5.5	70 - 130	30
Bromomethane	ND	0.005	118	121	2.5	127	123	3.2	40 - 160	30
Carbon Disulfide	ND	0.005	96	101	5.1	70	66	5.9	70 - 130	30 m
Carbon tetrachloride	ND	0.005	106	111	4.6	111	106	4.6	70 - 130	30
Chlorobenzene	ND	0.005	106	109	2.8	104	97	7.0	70 - 130	30
Chloroethane	ND	0.005	95	101	6.1	103	97	6.0	70 - 130	30
Chloroform	ND	0.005	97	102	5.0	107	101	5.8	70 - 130	30
Chloromethane	ND	0.005	95	96	1.0	102	101	1.0	40 - 160	30
cis-1,2-Dichloroethene	ND	0.005	103	108	4.7	109	105	3.7	70 - 130	30

QA/QC Data

SDG I.D.: GBY99472

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
cis-1,3-Dichloropropene	ND	0.005	115	120	4.3	98	96	2.1	70 - 130	30
Dibromochloromethane	ND	0.003	113	115	1.8	113	107	5.5	70 - 130	30
Dibromomethane	ND	0.005	109	112	2.7	102	98	4.0	70 - 130	30
Dichlorodifluoromethane	ND	0.005	93	96	3.2	106	108	1.9	40 - 160	30
Ethylbenzene	ND	0.001	106	108	1.9	105	99	5.9	70 - 130	30
Hexachlorobutadiene	ND	0.005	117	121	3.4	39	32	19.7	70 - 130	30 m
Isopropylbenzene	ND	0.001	113	117	3.5	121	111	8.6	70 - 130	30
m&p-Xylene	ND	0.002	104	106	1.9	98	93	5.2	70 - 130	30
Methyl ethyl ketone	ND	0.005	75	82	8.9	77	74	4.0	40 - 160	30
Methyl t-butyl ether (MTBE)	ND	0.001	87	88	1.1	92	88	4.4	70 - 130	30
Methylene chloride	ND	0.005	86	93	7.8	106	97	8.9	70 - 130	30
Naphthalene	ND	0.005	117	125	6.6	55	49	11.5	70 - 130	30 m
n-Butylbenzene	ND	0.001	117	122	4.2	69	65	6.0	70 - 130	30 m
n-Propylbenzene	ND	0.001	112	115	2.6	109	101	7.6	70 - 130	30
o-Xylene	ND	0.002	110	112	1.8	105	98	6.9	70 - 130	30
p-Isopropyltoluene	ND	0.001	113	117	3.5	85	79	7.3	70 - 130	30
sec-Butylbenzene	ND	0.001	115	118	2.6	87	81	7.1	70 - 130	30
Styrene	ND	0.005	106	109	2.8	66	60	9.5	70 - 130	30 m
tert-Butylbenzene	ND	0.001	112	115	2.6	100	93	7.3	70 - 130	30
Tetrachloroethene	ND	0.005	114	117	2.6	100	97	3.0	70 - 130	30
Tetrahydrofuran (THF)	ND	0.005	79	87	9.6	88	84	4.7	70 - 130	30
Toluene	ND	0.001	111	113	1.8	105	101	3.9	70 - 130	30
trans-1,2-Dichloroethene	ND	0.005	103	104	1.0	103	96	7.0	70 - 130	30
trans-1,3-Dichloropropene	ND	0.005	109	113	3.6	88	86	2.3	70 - 130	30
trans-1,4-dichloro-2-butene	ND	0.005	98	103	5.0	90	80	11.8	70 - 130	30
Trichloroethene	ND	0.005	111	114	2.7	108	102	5.7	70 - 130	30
Trichlorofluoromethane	ND	0.005	91	94	3.2	99	92	7.3	70 - 130	30
Trichlorotrifluoroethane	ND	0.005	94	98	4.2	96	92	4.3	70 - 130	30
Vinyl chloride	ND	0.005	102	102	0.0	104	102	1.9	70 - 130	30
% 1,2-dichlorobenzene-d4	93	%	102	103	1.0	97	99	2.0	70 - 130	30
% Bromofluorobenzene	101	%	98	98	0.0	92	95	3.2	70 - 130	30
% Dibromofluoromethane	102	%	93	96	3.2	97	99	2.0	70 - 130	30
% Toluene-d8	91	%	103	103	0.0	98	98	0.0	70 - 130	30

Comment:

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

QA/QC Batch 401039 (mg/Kg), QC Sample No: BY99617 2X (BY99472)

Polychlorinated Biphenyls - Soil

PCB-1016	ND	0.033	77	91	16.7	78	79	1.3	40 - 140	30
PCB-1221	ND	0.033							40 - 140	30
PCB-1232	ND	0.033							40 - 140	30
PCB-1242	ND	0.033							40 - 140	30
PCB-1248	ND	0.033							40 - 140	30
PCB-1254	ND	0.033							40 - 140	30
PCB-1260	ND	0.033	66	79	17.9	76	75	1.3	40 - 140	30
PCB-1262	ND	0.033							40 - 140	30
PCB-1268	ND	0.033							40 - 140	30
% DCBP (Surrogate Rec)	88	%	34	42	21.1	84	82	2.4	30 - 150	30
% TCMX (Surrogate Rec)	90	%	39	46	16.5	74	77	4.0	30 - 150	30

QA/QC Batch 401078 (mg/Kg), QC Sample No: BY99654 (BY99472)

TPH by GC (Extractable Products) - Soil

Ext. Petroleum H.C. (C9-C36)	ND	50	73	76	4.0				50 - 150	30
------------------------------	----	----	----	----	-----	--	--	--	----------	----

QA/QC Data

SDG I.D.: GBY99472

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
% n-Pentacosane	75	%	76	78	2.6				50 - 150	30

Comment:

The ETPH/DRO LCS has been normalized based on the alkane calibration.

m = This parameter is outside laboratory MS/MSD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference

LCS - Laboratory Control Sample

LCSD - Laboratory Control Sample Duplicate

MS - Matrix Spike

MS Dup - Matrix Spike Duplicate

NC - No Criteria

Intf - Interference



Phyllis Shiller, Laboratory Director

September 15, 2017

Friday, September 15, 2017

Criteria: MA: CAM, S1G2

State: MA

Sample Criteria Exceedances Report

GBY99472 - IESINC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BY99472	\$8260MAR	Methylene chloride	MA / CAM Protocol / VOA SOIL RL	ND	620		10	ug/Kg
BY99472	\$8260MAR	Carbon Disulfide	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Carbon tetrachloride	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Chlorobenzene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Chloroethane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Chloroform	MA / CAM Protocol / VOA SOIL RL	ND	200		10	ug/Kg
BY99472	\$8260MAR	Chloromethane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	cis-1,2-Dichloroethene	MA / CAM Protocol / VOA SOIL RL	ND	100		10	ug/Kg
BY99472	\$8260MAR	cis-1,3-Dichloropropene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Dibromochloromethane	MA / CAM Protocol / VOA SOIL RL	ND	62		10	ug/Kg
BY99472	\$8260MAR	Dibromomethane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Dichlorodifluoromethane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Hexachlorobutadiene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Trichlorotrifluoroethane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Methyl t-butyl ether (MTBE)	MA / CAM Protocol / VOA SOIL RL	ND	620		10	ug/Kg
BY99472	\$8260MAR	Bromodichloromethane	MA / CAM Protocol / VOA SOIL RL	ND	100		10	ug/Kg
BY99472	\$8260MAR	o-Xylene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	p-Isopropyltoluene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Styrene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	tert-Butylbenzene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Tetrachloroethene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA SOIL RL	ND	620		10	ug/Kg
BY99472	\$8260MAR	Toluene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	trans-1,2-Dichloroethene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	trans-1,3-Dichloropropene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA SOIL RL	ND	620		10	ug/Kg
BY99472	\$8260MAR	Trichloroethene	MA / CAM Protocol / VOA SOIL RL	ND	300		10	ug/Kg
BY99472	\$8260MAR	Trichlorofluoromethane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	1,1,1,2-Tetrachloroethane	MA / CAM Protocol / VOA SOIL RL	ND	100		10	ug/Kg
BY99472	\$8260MAR	Methyl Ethyl Ketone	MA / CAM Protocol / VOA SOIL RL	ND	1800		10	ug/Kg
BY99472	\$8260MAR	1,3-Dichloropropane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	1,1,1-Trichloroethane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	1,1,2,2-Tetrachloroethane	MA / CAM Protocol / VOA SOIL RL	ND	62		10	ug/Kg
BY99472	\$8260MAR	1,1,2-Trichloroethane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	1,1-Dichloroethane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	1,1-Dichloroethene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	1,1-Dichloropropene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	1,2,3-Trichlorobenzene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	1,2,3-Trichloropropane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	1,2,4-Trichlorobenzene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	1,2-Dibromo-3-chloropropane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	1,2-Dibromoethane	MA / CAM Protocol / VOA SOIL RL	ND	100		10	ug/Kg

Friday, September 15, 2017

Criteria: MA: CAM, S1G2

State: MA

Sample Criteria Exceedances Report

GBY99472 - IESINC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BY99472	\$8260MAR	1,2-Dichlorobenzene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	1,2-Dichloroethane	MA / CAM Protocol / VOA SOIL RL	ND	100		10	ug/Kg
BY99472	\$8260MAR	Bromomethane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	4-Chlorotoluene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Vinyl chloride	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Bromochloromethane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Bromobenzene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Benzene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Acrylonitrile	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	1,2-Dichloropropane	MA / CAM Protocol / VOA SOIL RL	ND	100		10	ug/Kg
BY99472	\$8260MAR	4-Methyl-2-pentanone	MA / CAM Protocol / VOA SOIL RL	ND	1500		10	ug/Kg
BY99472	\$8260MAR	1,3-Dichlorobenzene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	2-Isopropyltoluene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	2-Hexanone	MA / CAM Protocol / VOA SOIL RL	ND	1500		10	ug/Kg
BY99472	\$8260MAR	2-Chlorotoluene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	2,2-Dichloropropane	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	1,4-Dichlorobenzene	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Bromoform	MA / CAM Protocol / VOA SOIL RL	ND	310		10	ug/Kg
BY99472	\$8260MAR	Acetone	MA / CAM Protocol / VOA SOIL RL	ND	15000		10	ug/Kg
BY99472	\$8260MAR	1,1,2,2-Tetrachloroethane	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-2	ND	62	20	20	ug/Kg
BY99472	\$8260MAR	Dibromochloromethane	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-2	ND	62	30	30	ug/Kg
BY99473	\$8260MAR	Chloromethane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Hexachlorobutadiene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Dichlorodifluoromethane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Dibromomethane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Dibromochloromethane	MA / CAM Protocol / VOA SOIL RL	ND	82		10	ug/Kg
BY99473	\$8260MAR	1,1,1,2-Tetrachloroethane	MA / CAM Protocol / VOA SOIL RL	ND	100		10	ug/Kg
BY99473	\$8260MAR	cis-1,2-Dichloroethene	MA / CAM Protocol / VOA SOIL RL	ND	100		10	ug/Kg
BY99473	\$8260MAR	Methylene chloride	MA / CAM Protocol / VOA SOIL RL	ND	820		10	ug/Kg
BY99473	\$8260MAR	Chloroform	MA / CAM Protocol / VOA SOIL RL	ND	200		10	ug/Kg
BY99473	\$8260MAR	Chloroethane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Chlorobenzene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Carbon tetrachloride	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Carbon Disulfide	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	cis-1,3-Dichloropropene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA SOIL RL	ND	820		10	ug/Kg
BY99473	\$8260MAR	Trichlorotrifluoroethane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Trichlorofluoromethane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Trichloroethene	MA / CAM Protocol / VOA SOIL RL	ND	300		10	ug/Kg
BY99473	\$8260MAR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA SOIL RL	ND	820		10	ug/Kg
BY99473	\$8260MAR	trans-1,3-Dichloropropene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg

Friday, September 15, 2017

Criteria: MA: CAM, S1G2

State: MA

Sample Criteria Exceedances Report

GBY99472 - IESINC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BY99473	\$8260MAR	Methyl Ethyl Ketone	MA / CAM Protocol / VOA SOIL RL	ND	2400		10	ug/Kg
BY99473	\$8260MAR	Toluene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Methyl t-butyl ether (MTBE)	MA / CAM Protocol / VOA SOIL RL	ND	820		10	ug/Kg
BY99473	\$8260MAR	Tetrachloroethene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	tert-Butylbenzene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Styrene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	p-Isopropyltoluene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	o-Xylene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Bromodichloromethane	MA / CAM Protocol / VOA SOIL RL	ND	100		10	ug/Kg
BY99473	\$8260MAR	trans-1,2-Dichloroethene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,2,3-Trichlorobenzene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Bromomethane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,2-Dichloroethane	MA / CAM Protocol / VOA SOIL RL	ND	100		10	ug/Kg
BY99473	\$8260MAR	1,2-Dichlorobenzene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,2-Dibromoethane	MA / CAM Protocol / VOA SOIL RL	ND	100		10	ug/Kg
BY99473	\$8260MAR	1,2-Dibromo-3-chloropropane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,3-Dichlorobenzene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,2,3-Trichloropropane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,3-Dichloropropane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,1-Dichloropropene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,1-Dichloroethene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,1-Dichloroethane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,1,2-Trichloroethane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,1,2,2-Tetrachloroethane	MA / CAM Protocol / VOA SOIL RL	ND	82		10	ug/Kg
BY99473	\$8260MAR	Vinyl chloride	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,2,4-Trichlorobenzene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	4-Chlorotoluene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,1,1-Trichloroethane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Bromochloromethane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Bromobenzene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Benzene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Acrylonitrile	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,2-Dichloropropane	MA / CAM Protocol / VOA SOIL RL	ND	100		10	ug/Kg
BY99473	\$8260MAR	4-Methyl-2-pentanone	MA / CAM Protocol / VOA SOIL RL	ND	2000		10	ug/Kg
BY99473	\$8260MAR	Bromoform	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	2-Isopropyltoluene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	2-Hexanone	MA / CAM Protocol / VOA SOIL RL	ND	2000		10	ug/Kg
BY99473	\$8260MAR	2-Chlorotoluene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	2,2-Dichloropropane	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	1,4-Dichlorobenzene	MA / CAM Protocol / VOA SOIL RL	ND	410		10	ug/Kg
BY99473	\$8260MAR	Acetone	MA / CAM Protocol / VOA SOIL RL	ND	20000		10	ug/Kg
BY99473	\$8260MAR	Dibromochloromethane	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-2	ND	82	30	30	ug/Kg

Friday, September 15, 2017

Criteria: MA: CAM, S1G2

State: MA

Sample Criteria Exceedances Report

GBY99472 - IESINC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BY99473	\$8260MAR	1,1,2,2-Tetrachloroethane	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-2	ND	82	20	20	ug/Kg

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

MassDEP Analytical Protocol Certification Form

Laboratory Name: Phoenix Environmental Laboratories, Inc. **Project #:**

Project Location: 103 WASHINGTON ST SOMERVILLE **RTN:**

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]
BY99472, BY99473

Matrices: ☐ Groundwater/Surface Water ☒ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below)

8260 VOC CAM II A ☒	7470/7471 Hg CAM III B ☒	MassDEP VPH CAM IV A ☐	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
8270 SVOC CAM II B ☐	7010 Metals CAM III C ☐	MassDEP EPH CAM IV B ☐	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☒	6020 Metals CAM III D ☐	8082 PCB CAM V A ☒	9012 Total Cyanide/PAC CAM V1 A ☐	6860 Perchlorate CAM VIII B ☐	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature*) in the field or laboratory, and prepared/analyzed with method holding times? (* see narrative)	☒ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☒ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☒ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☒ Yes ☐ No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?	☐ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☒ Yes ☐ No

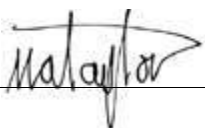
Responses to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☐ Yes ☒ No
Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350		
H	Were all QC performance standards specified in the CAM protocol(s) achieved? See Section: ICP Narration .	☐ Yes ☒ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes ☒ No

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Authorized
Signature: _____



Date: Friday, September 15, 2017
Printed Name: Maryam Taylor
Position: Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

September 15, 2017

SDG I.D.: GBY99472

SDG Comments

Metals Analysis:

The client requested a shorter list of elements than the 6010 MCP list.

Volatile 8260 analysis:

Some samples required a dilution due to the presence of target and non-target compounds; not all requested reporting levels were achieved.

8260 Volatile Organics:

The following compounds from the MCP 8260 analyte list were not performed: TAME, diethyl ether, diisopropyl ether, 1,4 dioxane, and ETBE.

Cyanide Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

LACHAT 09/13/17-1

Dustin Harrison, Greg Danielewski, Chemist 09/13/17

BY99472

The samples were distilled in accordance with the method.

The initial calibration met criteria.

The calibration check standards (ICV,CCV) were within 15% of true value and were analyzed at a frequency of one per ten samples.

The continuing calibration blanks (ICB,CCB) had concentrations less than the reporting level.

The method blank, laboratory control sample (LCS), and matrix spike were distilled with the samples.

QC (Batch Specific):

Batch 401113 (BY99070)

BY99472

All LCS recoveries were within 80 - 120 with the following exceptions: None.

Additional soil criteria LCS acceptance range is 80-120% MS acceptance range 75-125%.

Additional soil criteria LCS acceptance range is 80-120% MS acceptance range 75-125%.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

ETPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

AU-FID84 09/13/17-1

Jeff Bucko, Chemist 09/13/17

BY99472

The initial calibration (ETPH830I) RSD for the compound list was less than 30% except for the following compounds: None.

The continuing calibration %D for the compound list was less than 30% except for the following compounds:None.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

September 15, 2017

SDG I.D.: GBY99472

ETPH Narration

QC (Batch Specific):

Batch 401078 (BY99654)

BY99472

All LCS recoveries were within 50 - 150 with the following exceptions: None.
All LCSD recoveries were within 50 - 150 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
The ETPH/DRO LCS has been normalized based on the alkane calibration.
The ETPH/DRO LCS has been normalized based on the alkane calibration.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Mercury Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

MERLIN 09/13/17 08:33

Rick Schweitzer, Chemist 09/13/17

BY99472

The method preparation blank contains all of the acids and reagents as the samples; the instrument blanks do not.
The initial calibration met all criteria including a standard run at or below the reporting level.
All calibration verification standards (ICV, CCV) met criteria.
All calibration blank verification standards (ICB, CCB) met criteria.
The matrix spike sample is used to identify spectral interference for each batch of samples, if within 85-115%, no interference is observed and no further action is taken.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 401117 (BY98869)

BY99472

All LCS recoveries were within 75 - 125 with the following exceptions: None.
All LCSD recoveries were within 75 - 125 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? No.

QC Batch 401122 (Samples: BY99472): -----

The Sample/Duplicate RPD exceeds the method criteria for one or more analytes, therefore there may be variability in the reported result. (Lead)



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Certification Report

September 15, 2017

SDG I.D.: GBY99472

ICP Metals Narration

Instrument:

ARCOS 09/12/17 05:57 Mike Arsenault, Chemist 09/12/17

BY99472

Additional criteria for CCV and ICSAB:

Sodium and Potassium are poor performing elements, the laboratory's in-house limits are 85-115% (CCV) and 70-130% (ICSAB). The linear range is defined daily by the calibration range.

The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.

The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

ARCOS 09/13/17 07:00 Mike Arsenault, Chemist 09/13/17

BY99472

Additional criteria for CCV and ICSAB:

Sodium and Potassium are poor performing elements, the laboratory's in-house limits are 85-115% (CCV) and 70-130% (ICSAB). The linear range is defined daily by the calibration range.

The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.

The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 401045 (BY99428)

BY99472

All LCS recoveries were within 75 - 125 with the following exceptions: None.

Batch 401122 (BY98529)

BY99472

All LCS recoveries were within 75 - 125 with the following exceptions: None.

PCB Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

AU-ECD29 09/12/17-1 Adam Werner, Chemist 09/12/17

BY99472

The initial calibration (PC911AI) RSD for the compound list was less than 20% except for the following compounds: None.

The initial calibration (PC911BI) RSD for the compound list was less than 20% except for the following compounds: None.

The continuing calibration %D for the compound list was less than 15% except for the following compounds: None.

QC (Batch Specific):

Batch 401039 (BY99617)

BY99472

All LCS recoveries were within 40 - 140 with the following exceptions: None.

All LCSD recoveries were within 40 - 140 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

September 15, 2017

SDG I.D.: GBY99472

PCB Narration

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

CHEM18 09/12/17-2

Jane Li, Chemist 09/12/17

BY99472, BY99473

Initial Calibration Verification (CHEM18/VT-M0911):

98% of target compounds met criteria.

The following compounds had %RSDs >20%: Bromomethane 21% (20%), Methylene chloride 21% (20%)

The following compounds did not meet recommended response factors: None.

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM18/0912M31-VT-M0911) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

99% of target compounds met criteria.

The following compounds did not meet % deviation criteria: Methylene chloride 21%L (20%)

The following compounds did not meet maximum % deviations: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 401132 (BY98873)

BY99472, BY99473

All LCS recoveries were within 70 - 130 with the following exceptions: None.

All LCSD recoveries were within 70 - 130 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Temp	33C	Pg	of

CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726



Customer: IES, Inc.
Address: 50 Salem Street, Building A - Suite 108
Lynnfield, MA 01940

Project:	103 Washington Street, Somerville
Report to:	Chris Buchanan
Invoice to:	IES, Inc
Phone #:	617.623.8880
Fax #:	

Project P.O.:

This section MUST be completed with Bottle Quantities.

Data Delivery:

Fax #: _____

Email: cbuchanan@iesinc.com

Client Sample - Information - Identification

**Sampler's
Signature**

re

Matrix Code:
 DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
 RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe
 OIL=Oil B=Bulk L=Liquid

HOENIX USE ONLY	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled
SAMPLE #				
299472	Soil Disposal S-1	S	9/11/2017	11:30
299473	Soil Disposal S-1A	S	9/11/2017	11:30

Analysis Request

Analysis Request

Relinquished by:

Accepted by:

Date: Time:

81

5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	
---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	--

MA

Data Format

Comments, Special Requirements or Regulations:

Composite -
* soil bag is composite of
S-1 and S-1A for % Solids

Turnaround:

☒	1 Day*
☐	2 Days*
☐	3 Days*
☒	Standard
☐	Other

☐ Other _____

State where samples were collected:

A

*** SURCHARGE APPLIES**



Friday, September 22, 2017

Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Project ID: 103 WASHINGTON ST SOMERVILLE
Sample ID#s: BZ04001

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Phyllis Shiller".

Phyllis Shiller

Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



SDG Comments

September 22, 2017

SDG I.D.: GBZ04001

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

September 22, 2017

FOR: Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: 48 Hour
P.O.#:

Custody Information

Collected by:
Received by: B
Analyzed by: see "By" below

Date

09/18/17 10:20
09/19/17 15:33

Time

Laboratory Data

SDG ID: GBZ04001
Phoenix ID: BZ04001

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: SP-2A

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	81		%		09/19/17	I	SW846-%Solid
Extraction of TPH SM	Completed				09/19/17	JJ/VCK	SW3545A

TPH by GC (Extractable Products)

Fuel Oil #2 / Diesel Fuel	ND	62	mg/kg	1	09/20/17	JRB	SW8015D DRO
Fuel Oil #4	ND	62	mg/kg	1	09/20/17	JRB	SW8015D DRO
Fuel Oil #6	ND	62	mg/kg	1	09/20/17	JRB	SW8015D DRO
Kerosene	ND	62	mg/kg	1	09/20/17	JRB	SW8015D DRO
Motor Oil	ND	62	mg/kg	1	09/20/17	JRB	SW8015D DRO
Other Oil	ND	62	mg/kg	1	09/20/17	JRB	SW8015D DRO
Unidentified	ND	62	mg/kg	1	09/20/17	JRB	SW8015D DRO

QA/QC Surrogates

% n-Pentacosane	83		%	1	09/20/17	JRB	50 - 150 %
-----------------	----	--	---	---	----------	-----	------------

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

September 22, 2017

Reviewed and Released by: Ethan Lee, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

September 22, 2017

QA/QC Data

SDG I.D.: GBZ04001

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 402058 (mg/Kg), QC Sample No: BZ04071 (BZ04001)										
<u>TPH by GC (Extractable Products) - Soil</u>										
Ext. Petroleum H.C. (C9-C36)	ND	50	80	88	9.5	107	103	3.8	50 - 150	30
% n-Pentacosane	76	%	73	72	1.4	89	86	3.4	50 - 150	30

Comment:

The ETPH/DRO LCS has been normalized based on the alkane calibration.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director

September 22, 2017

Friday, September 22, 2017

Criteria: MA: CAM, GW2, S1

State: MA

Sample Criteria Exceedances Report

GBZ04001 - IESINC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
--------	-------	-----------------	----------	--------	----	----------	----------------	-------------------

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

MassDEP Analytical Protocol Certification Form

Laboratory Name: Phoenix Environmental Laboratories, Inc. **Project #:**

Project Location: 103 WASHINGTON ST SOMERVILLE **RTN:**

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]
BZ04001

Matrices: ☐ Groundwater/Surface Water ☒ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below)

8260 VOC CAM II A ☐	7470/7471 Hg CAM III B ☐	MassDEP VPH CAM IV A ☐	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
8270 SVOC CAM II B ☐	7010 Metals CAM III C ☐	MassDEP EPH CAM IV B ☐	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☐	6020 Metals CAM III D ☐	8082 PCB CAM V A ☐	9012 Total Cyanide/PAC CAM V1 A ☐	6860 Perchlorate CAM VIII B ☐	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature*) in the field or laboratory, and prepared/analyzed with method holding times? (* see narrative)	☒ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☒ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☒ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☒ Yes ☐ No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?	☐ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☒ Yes ☐ No

Responses to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☒ Yes ☐ No
Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350		
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	☒ Yes ☐ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☒ Yes ☐ No

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Authorized
Signature: _____

Ethan Lee

Date: Friday, September 22, 2017

Printed Name: Ethan Lee

Position: Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

September 22, 2017

SDG I.D.: GBZ04001

ETPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

AU-FID21 09/20/17-1

Jeff Bucko, Chemist 09/20/17

BZ04001

The initial calibration (ETPH819I) RSD for the compound list was less than 30% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 30% except for the following compounds:None.

QC (Batch Specific):

Batch 402058 (BZ04071)

BZ04001

All LCS recoveries were within 50 - 150 with the following exceptions: None.
All LCSD recoveries were within 50 - 150 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
The ETPH/DRO LCS has been normalized based on the alkane calibration.
The ETPH/DRO LCS has been normalized based on the alkane calibration.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Friday, September 15, 2017

Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Project ID: 103 WASHINGTON ST SOMERVILLE
Sample ID#s: BY99474 - BY99477

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Phyllis Shiller".

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



SDG Comments

September 15, 2017

SDG I.D.: GBY99474

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

September 15, 2017

FOR: Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: 48 Hour
P.O.#:

Custody Information

Collected by:
Received by: SW
Analyzed by: see "By" below

Date

09/11/17
09/12/17

Time

8:30
15:30

Laboratory Data

SDG ID: GBY99474
Phoenix ID: BY99474

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: SS-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	83		%		09/12/17	Q	SW846-%Solid
MA Petroleum Hydrocarbon (VPH)	Completed				09/14/17	CG	MADEP VPH04

VPH Target Analytes

Benzene	ND	0.091	mg/Kg	50	09/13/17	JLI	SW8260C
Ethyl Benzene	ND	0.46	mg/Kg	50	09/13/17	JLI	SW8260C
m,p-Xylenes	ND	0.46	mg/Kg	50	09/13/17	JLI	SW8260C
MTBE	ND	0.091	mg/Kg	50	09/13/17	JLI	SW8260C
Naphthalene	ND	0.46	mg/Kg	50	09/13/17	JLI	SW8260C
o-Xylene	ND	0.46	mg/Kg	50	09/13/17	JLI	SW8260C
Toluene	ND	0.46	mg/Kg	50	09/13/17	JLI	SW8260C

MA Volatile Petroleum Hydrocarbons (VPH)

C5-C8 Aliphatic Hydrocarbons *1,2	ND	8.1	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	ND	8.1	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	ND	8.1	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
Unadjusted C5-C8 Aliphatics (*1)	ND	8.1	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	ND	8.1	mg/Kg	50	09/14/17	CG	MA VPH 5/2004

QA/QC Surrogates

% 2,5-Dibromotoluene (FID)	106		%	50	09/14/17	CG	70 - 130 %
% 2,5-Dibromotoluene (PID)	102		%	50	09/14/17	CG	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

VPH:

*1 Range data exclude concentrations of any surrogate(s) and/or Internal stds eluting in that range.

*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.

*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbons.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

September 15, 2017

Reviewed and Released by: Maryam Taylor, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

September 15, 2017

FOR: Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: 48 Hour
P.O.#:

Custody Information

Collected by:
Received by: SW
Analyzed by: see "By" below

Date

09/11/17
09/12/17

Time

8:40
15:30

Laboratory Data

SDG ID: GBY99474
Phoenix ID: BY99475

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: SS-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	88		%		09/12/17	Q	SW846-%Solid
MA Petroleum Hydrocarbon (VPH)	Completed				09/14/17	CG	MADEP VPH04

VPH Target Analytes

Benzene	ND	0.074	mg/Kg	50	09/13/17	JLI	SW8260C
Ethyl Benzene	ND	0.37	mg/Kg	50	09/13/17	JLI	SW8260C
m,p-Xylenes	ND	0.37	mg/Kg	50	09/13/17	JLI	SW8260C
MTBE	ND	0.074	mg/Kg	50	09/13/17	JLI	SW8260C
Naphthalene	ND	0.37	mg/Kg	50	09/13/17	JLI	SW8260C
o-Xylene	ND	0.37	mg/Kg	50	09/13/17	JLI	SW8260C
Toluene	ND	0.37	mg/Kg	50	09/13/17	JLI	SW8260C

MA Volatile Petroleum Hydrocarbons (VPH)

C5-C8 Aliphatic Hydrocarbons *1,2	ND	6.7	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	ND	6.7	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	ND	6.7	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
Unadjusted C5-C8 Aliphatics (*1)	ND	6.7	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	ND	6.7	mg/Kg	50	09/14/17	CG	MA VPH 5/2004

QA/QC Surrogates

% 2,5-Dibromotoluene (FID)	108		%	50	09/14/17	CG	70 - 130 %
% 2,5-Dibromotoluene (PID)	103		%	50	09/14/17	CG	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

VPH:

*1 Range data exclude concentrations of any surrogate(s) and/or Internal stds eluting in that range.

*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.

*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbons.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

September 15, 2017

Reviewed and Released by: Maryam Taylor, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

September 15, 2017

FOR: Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: 48 Hour
P.O.#:

Custody Information

Collected by:
Received by: SW
Analyzed by: see "By" below

Date

09/11/17
09/12/17

Time

8:45
15:30

Laboratory Data

SDG ID: GBY99474
Phoenix ID: BY99476

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: SS-3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	83		%		09/12/17	Q	SW846-%Solid
MA Petroleum Hydrocarbon (VPH)	Completed				09/14/17	CG	MADEP VPH04

VPH Target Analytes

Benzene	ND	0.088	mg/Kg	50	09/13/17	JLI	SW8260C
Ethyl Benzene	ND	0.44	mg/Kg	50	09/13/17	JLI	SW8260C
m,p-Xylenes	ND	0.44	mg/Kg	50	09/13/17	JLI	SW8260C
MTBE	ND	0.088	mg/Kg	50	09/13/17	JLI	SW8260C
Naphthalene	ND	0.44	mg/Kg	50	09/13/17	JLI	SW8260C
o-Xylene	ND	0.44	mg/Kg	50	09/13/17	JLI	SW8260C
Toluene	ND	0.44	mg/Kg	50	09/13/17	JLI	SW8260C

MA Volatile Petroleum Hydrocarbons (VPH)

C5-C8 Aliphatic Hydrocarbons *1,2	ND	7.8	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	ND	7.8	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	ND	7.8	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
Unadjusted C5-C8 Aliphatics (*1)	ND	7.8	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	ND	7.8	mg/Kg	50	09/14/17	CG	MA VPH 5/2004

QA/QC Surrogates

% 2,5-Dibromotoluene (FID)	105		%	50	09/14/17	CG	70 - 130 %
% 2,5-Dibromotoluene (PID)	100		%	50	09/14/17	CG	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

VPH:

*1 Range data exclude concentrations of any surrogate(s) and/or Internal stds eluting in that range.

*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.

*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbons.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

September 15, 2017

Reviewed and Released by: Maryam Taylor, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

September 15, 2017

FOR: Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: 48 Hour
P.O.#:

Custody Information

Collected by:
Received by: SW
Analyzed by: see "By" below

Date

09/11/17
09/12/17

Time

8:50
15:30

Laboratory Data

SDG ID: GBY99474
Phoenix ID: BY99477

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: SS-4

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	83		%		09/12/17	Q	SW846-%Solid
MA Petroleum Hydrocarbon (VPH)	Completed				09/14/17	CG	MADEP VPH04

VPH Target Analytes

Benzene	ND	0.11	mg/Kg	50	09/13/17	JLI	SW8260C
Ethyl Benzene	ND	0.54	mg/Kg	50	09/13/17	JLI	SW8260C
m,p-Xylenes	ND	0.54	mg/Kg	50	09/13/17	JLI	SW8260C
MTBE	ND	0.11	mg/Kg	50	09/13/17	JLI	SW8260C
Naphthalene	ND	0.54	mg/Kg	50	09/13/17	JLI	SW8260C
o-Xylene	ND	0.54	mg/Kg	50	09/13/17	JLI	SW8260C
Toluene	ND	0.54	mg/Kg	50	09/13/17	JLI	SW8260C

MA Volatile Petroleum Hydrocarbons (VPH)

C5-C8 Aliphatic Hydrocarbons *1,2	ND	9.8	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	ND	9.8	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	ND	9.8	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
Unadjusted C5-C8 Aliphatics (*1)	ND	9.8	mg/Kg	50	09/14/17	CG	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	ND	9.8	mg/Kg	50	09/14/17	CG	MA VPH 5/2004

QA/QC Surrogates

% 2,5-Dibromotoluene (FID)	107	%	50	09/14/17	CG	70 - 130 %
% 2,5-Dibromotoluene (PID)	102	%	50	09/14/17	CG	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

VPH:

*1 Range data exclude concentrations of any surrogate(s) and/or Internal stds eluting in that range.

*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.

*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbons.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

September 15, 2017

Reviewed and Released by: Maryam Taylor, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

September 15, 2017

QA/QC Data

SDG I.D.: GBY99474

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 401132 (mg/Kg), QC Sample No: BY98873 (BY99474 (50X) , BY99475 (50X) , BY99476 (50X) , BY99477 (50X))										
<u>Volatiles - Soil</u>										
Benzene	ND	0.001	108	111	2.7	106	103	2.9	70 - 130	30
Ethylbenzene	ND	0.001	106	108	1.9	105	99	5.9	70 - 130	30
m&p-Xylene	ND	0.002	104	106	1.9	98	93	5.2	70 - 130	30
Methyl t-butyl ether (MTBE)	ND	0.001	87	88	1.1	92	88	4.4	70 - 130	30
Naphthalene	ND	0.005	117	125	6.6	55	49	11.5	70 - 130	30 m
o-Xylene	ND	0.002	110	112	1.8	105	98	6.9	70 - 130	30
Toluene	ND	0.001	111	113	1.8	105	101	3.9	70 - 130	30

Comment:

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

QA/QC Batch 401319 (mg/Kg), QC Sample No: BY99474 (BY99474 (50X) , BY99475 (50X) , BY99476 (50X) , BY99477 (50X))

Volatile Petroleum Hydrocarbons - Soil

C5-C8 Aliphatic Hydrocarbons *1,2	ND	5.0	104	105	1.0	98	94	4.2	70 - 130	30
C9-C10 Aromatic Hydrocarbons *1	ND	1.7	94	94	0.0	94	94	0.0	70 - 130	30
C9-C12 Aliphatic Hydrocarbons *1,	ND	5.0	103	98	5.0	91	88	3.4	70 - 130	30
Unadjusted C5-C8 Aliphatics (*1)	ND	5.0	104	105	1.0	98	94	4.2	70 - 130	30
Unadjusted C9-C12 Aliphatics (*1)	ND	5.0	103	98	5.0	91	88	3.4	70 - 130	30
% 2,5-Dibromotoluene (FID)	105	%	106	97	8.9	99	99	0.0	70 - 130	30
% 2,5-Dibromotoluene (PID)	100	%	102	94	8.2	97	97	0.0	70 - 130	30

m = This parameter is outside laboratory MS/MSD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference

LCS - Laboratory Control Sample

LCSD - Laboratory Control Sample Duplicate

MS - Matrix Spike

MS Dup - Matrix Spike Duplicate

NC - No Criteria

Intf - Interference

Phyllis Shiller, Laboratory Director

September 15, 2017

Friday, September 15, 2017

Criteria: MA: CAM, S1G2

State: MA

Sample Criteria Exceedances Report

GBY99474 - IESINC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BY99474	\$VPHMS-SM	Ethyl Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.46		0.01	mg/Kg
BY99474	\$VPHMS-SM	MTBE	MA / CAM Protocol / VOA SOIL RL	ND	0.091		0.01	mg/Kg
BY99474	\$VPHMS-SM	Naphthalene	MA / CAM Protocol / VOA SOIL RL	ND	0.46		0.01	mg/Kg
BY99474	\$VPHMS-SM	o-Xylene	MA / CAM Protocol / VOA SOIL RL	ND	0.46		0.01	mg/Kg
BY99474	\$VPHMS-SM	Toluene	MA / CAM Protocol / VOA SOIL RL	ND	0.46		0.01	mg/Kg
BY99474	\$VPHMS-SM	Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.091		0.01	mg/Kg
BY99475	\$VPHMS-SM	Toluene	MA / CAM Protocol / VOA SOIL RL	ND	0.37		0.01	mg/Kg
BY99475	\$VPHMS-SM	Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.074		0.01	mg/Kg
BY99475	\$VPHMS-SM	Ethyl Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.37		0.01	mg/Kg
BY99475	\$VPHMS-SM	MTBE	MA / CAM Protocol / VOA SOIL RL	ND	0.074		0.01	mg/Kg
BY99475	\$VPHMS-SM	Naphthalene	MA / CAM Protocol / VOA SOIL RL	ND	0.37		0.01	mg/Kg
BY99475	\$VPHMS-SM	o-Xylene	MA / CAM Protocol / VOA SOIL RL	ND	0.37		0.01	mg/Kg
BY99476	\$VPHMS-SM	Ethyl Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.44		0.01	mg/Kg
BY99476	\$VPHMS-SM	MTBE	MA / CAM Protocol / VOA SOIL RL	ND	0.088		0.01	mg/Kg
BY99476	\$VPHMS-SM	Naphthalene	MA / CAM Protocol / VOA SOIL RL	ND	0.44		0.01	mg/Kg
BY99476	\$VPHMS-SM	o-Xylene	MA / CAM Protocol / VOA SOIL RL	ND	0.44		0.01	mg/Kg
BY99476	\$VPHMS-SM	Toluene	MA / CAM Protocol / VOA SOIL RL	ND	0.44		0.01	mg/Kg
BY99476	\$VPHMS-SM	Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.088		0.01	mg/Kg
BY99477	\$VPHMS-SM	Toluene	MA / CAM Protocol / VOA SOIL RL	ND	0.54		0.01	mg/Kg
BY99477	\$VPHMS-SM	Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.11		0.01	mg/Kg
BY99477	\$VPHMS-SM	Ethyl Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.54		0.01	mg/Kg
BY99477	\$VPHMS-SM	MTBE	MA / CAM Protocol / VOA SOIL RL	ND	0.11		0.01	mg/Kg
BY99477	\$VPHMS-SM	Naphthalene	MA / CAM Protocol / VOA SOIL RL	ND	0.54		0.01	mg/Kg
BY99477	\$VPHMS-SM	o-Xylene	MA / CAM Protocol / VOA SOIL RL	ND	0.54		0.01	mg/Kg

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedances. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedance information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

MassDEP Analytical Protocol Certification Form

Laboratory Name: Phoenix Environmental Laboratories, Inc. **Project #:**

Project Location: 103 WASHINGTON ST SOMERVILLE **RTN:**

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

BY99474, BY99475, BY99476, BY99477

Matrices: ☐ Groundwater/Surface Water ☒ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below)

8260 VOC CAM II A ☒	7470/7471 Hg CAM III B ☐	MassDEP VPH CAM IV A ☒	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
8270 SVOC CAM II B ☐	7010 Metals CAM III C ☐	MassDEP EPH CAM IV B ☐	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☐	6020 Metals CAM III D ☐	8082 PCB CAM V A ☐	9012 Total Cyanide/PAC CAM V1 A ☐	6860 Perchlorate CAM VIII B ☐	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature*) in the field or laboratory, and prepared/analyzed with method holding times? (* see narrative)	☒ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☒ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☒ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☒ Yes ☐ No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?	☐ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☒ Yes ☐ No

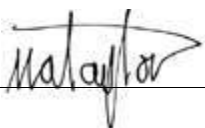
Responses to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☐ Yes ☒ No
Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350		
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	☒ Yes ☐ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☒ Yes ☐ No

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Authorized
Signature: _____



Date: Friday, September 15, 2017

Printed Name: Maryam Taylor

Position: Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

September 15, 2017

SDG I.D.: GBY99474

VOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

CHEM18 09/12/17-2

Jane Li, Chemist 09/12/17

BY99474, BY99475, BY99476, BY99477

Initial Calibration Verification (CHEM18/VT-M0911):

98% of target compounds met criteria.

The following compounds had %RSDs >20%: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM18/0912M31-VT-M0911) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

99% of target compounds met criteria.

The following compounds did not meet % deviation criteria: None.

The following compounds did not meet maximum % deviations: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 401132 (BY98873)

BY99474, BY99475, BY99476, BY99477

All LCS recoveries were within 70 - 130 with the following exceptions: None.

All LCSD recoveries were within 70 - 130 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

PIDFID 09/13/17-1

Caleb Githinji, Chemist 09/13/17

BY99474, BY99475, BY99476, BY99477

A seven level calibration was performed. All RSDs were within limits.

The continuing calibration standards were within control limits.

The continuing calibration %D for the compound list was less than 25% except for the following compounds: None.

QC (Batch Specific):



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

September 15, 2017

SDG I.D.: GBY99474

VPH Narration

QC (Batch Specific):

Batch 401319 (BY99474)

BY99474, BY99475, BY99476, BY99477

All LCS recoveries were within 70 - 130 with the following exceptions: None.

All LCSD recoveries were within 70 - 130 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Tuesday, October 31, 2017

Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Project ID: 103 WASHINGTON ST SOMERVILLE
Sample ID#s: BZ24406 - BZ24408

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Phyllis Shiller".

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



SDG Comments

October 31, 2017

SDG I.D.: GBZ24406

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

October 31, 2017

FOR: Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: Standard
P.O.#:

Custody Information

Collected by:
Received by: B
Analyzed by: see "By" below

Date

10/18/17
10/19/17

Time

13:00
18:12

Laboratory Data

SDG ID: GBZ24406
Phoenix ID: BZ24406

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: S-5

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	80		%		10/19/17	Q	SW846-%Solid
MA Petroleum Hydrocarbon (VPH)	Completed				10/27/17	CG	MADEP VPH04

VPH Target Analytes

Benzene	ND	0.083	mg/Kg	50	10/20/17	JLI	SW8260C
Ethyl Benzene	ND	0.41	mg/Kg	50	10/20/17	JLI	SW8260C
m,p-Xylenes	ND	0.41	mg/Kg	50	10/20/17	JLI	SW8260C
MTBE	ND	0.083	mg/Kg	50	10/20/17	JLI	SW8260C
Naphthalene	ND	0.41	mg/Kg	50	10/20/17	JLI	SW8260C
o-Xylene	ND	0.41	mg/Kg	50	10/20/17	JLI	SW8260C
Toluene	ND	0.41	mg/Kg	50	10/20/17	JLI	SW8260C

MA Volatile Petroleum Hydrocarbons (VPH)

C5-C8 Aliphatic Hydrocarbons *1,2	ND	7.0	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	ND	7.0	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	ND	7.0	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
Unadjusted C5-C8 Aliphatics (*1)	ND	7.0	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	ND	7.0	mg/Kg	50	10/27/17	CG	MA VPH 5/2004

QA/QC Surrogates

% 2,5-Dibromotoluene (FID)	93		%	50	10/27/17	CG	70 - 130 %
% 2,5-Dibromotoluene (PID)	99		%	50	10/27/17	CG	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

VPH:

*1 Range data exclude concentrations of any surrogate(s) and/or Internal stds eluting in that range.

*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.

*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbons.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

October 31, 2017

Reviewed and Released by: Ethan Lee, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

October 31, 2017

FOR: Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: Standard
P.O.#:

Custody Information

Collected by:
Received by: B
Analyzed by: see "By" below

Date

10/18/17
10/19/17

Time

13:10
18:12

Laboratory Data

SDG ID: GBZ24406
Phoenix ID: BZ24407

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: S-6

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	87		%		10/19/17	Q	SW846-%Solid
MA Petroleum Hydrocarbon (VPH)	Completed				10/27/17	CG	MADEP VPH04

VPH Target Analytes

Benzene	ND	0.070	mg/Kg	50	10/20/17	JLI	SW8260C
Ethyl Benzene	ND	0.35	mg/Kg	50	10/20/17	JLI	SW8260C
m,p-Xylenes	ND	0.35	mg/Kg	50	10/20/17	JLI	SW8260C
MTBE	ND	0.070	mg/Kg	50	10/20/17	JLI	SW8260C
Naphthalene	ND	0.35	mg/Kg	50	10/20/17	JLI	SW8260C
o-Xylene	ND	0.35	mg/Kg	50	10/20/17	JLI	SW8260C
Toluene	ND	0.35	mg/Kg	50	10/20/17	JLI	SW8260C

MA Volatile Petroleum Hydrocarbons (VPH)

C5-C8 Aliphatic Hydrocarbons *1,2	ND	6.3	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	ND	6.3	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	ND	6.3	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
Unadjusted C5-C8 Aliphatics (*1)	ND	6.3	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	ND	6.3	mg/Kg	50	10/27/17	CG	MA VPH 5/2004

QA/QC Surrogates

% 2,5-Dibromotoluene (FID)	102		%	50	10/27/17	CG	70 - 130 %
% 2,5-Dibromotoluene (PID)	100		%	50	10/27/17	CG	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

VPH:

*1 Range data exclude concentrations of any surrogate(s) and/or Internal stds eluting in that range.

*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.

*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbons.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

October 31, 2017

Reviewed and Released by: Ethan Lee, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

October 31, 2017

FOR: Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: Standard
P.O.#:

Custody Information

Collected by:
Received by: B
Analyzed by: see "By" below

Date

10/18/17
10/19/17

Time

13:15
18:12

Laboratory Data

SDG ID: GBZ24406
Phoenix ID: BZ24408

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: S-7

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	83		%		10/19/17	Q	SW846-%Solid
MA Petroleum Hydrocarbon (VPH)	Completed				10/27/17	CG	MADEP VPH04

VPH Target Analytes

Benzene	ND	0.086	mg/Kg	50	10/20/17	JLI	SW8260C
Ethyl Benzene	ND	0.43	mg/Kg	50	10/20/17	JLI	SW8260C
m,p-Xylenes	ND	0.43	mg/Kg	50	10/20/17	JLI	SW8260C
MTBE	ND	0.086	mg/Kg	50	10/20/17	JLI	SW8260C
Naphthalene	ND	0.43	mg/Kg	50	10/20/17	JLI	SW8260C
o-Xylene	ND	0.43	mg/Kg	50	10/20/17	JLI	SW8260C
Toluene	ND	0.43	mg/Kg	50	10/20/17	JLI	SW8260C

MA Volatile Petroleum Hydrocarbons (VPH)

C5-C8 Aliphatic Hydrocarbons *1,2	ND	7.6	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	ND	7.6	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	ND	7.6	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
Unadjusted C5-C8 Aliphatics (*1)	ND	7.6	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	ND	7.6	mg/Kg	50	10/27/17	CG	MA VPH 5/2004

QA/QC Surrogates

% 2,5-Dibromotoluene (FID)	95		%	50	10/27/17	CG	70 - 130 %
% 2,5-Dibromotoluene (PID)	101		%	50	10/27/17	CG	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

VPH:

*1 Range data exclude concentrations of any surrogate(s) and/or Internal stds eluting in that range.

*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.

*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbons.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

October 31, 2017

Reviewed and Released by: Ethan Lee, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

October 31, 2017

QA/QC Data

SDG I.D.: GBZ24406

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 407489 (mg/Kg), QC Sample No: BZ24399 (BZ24406 (50X) , BZ24407 (50X) , BZ24408 (50X))										
<u>Volatile Petroleum Hydrocarbons - Soil</u>										
C5-C8 Aliphatic Hydrocarbons *1,2	ND	5.0	86	80	7.2	79	82	3.7	70 - 130	30
C9-C10 Aromatic Hydrocarbons *1	ND	1.7	96	95	1.0	96	101	5.1	70 - 130	30
C9-C12 Aliphatic Hydrocarbons *1,	ND	5.0	87	86	1.2	85	86	1.2	70 - 130	30
Unadjusted C5-C8 Aliphatics (*1)	ND	5.0	86	80	7.2	79	82	3.7	70 - 130	30
Unadjusted C9-C12 Aliphatics (*1)	ND	5.0	87	86	1.2	85	86	1.2	70 - 130	30
% 2,5-Dibromotoluene (FID)	95	%	93	94	1.1	101	93	8.2	70 - 130	30
% 2,5-Dibromotoluene (PID)	100	%	98	99	1.0	107	99	7.8	70 - 130	30

QA/QC Batch 406614 (mg/Kg), QC Sample No: BZ24582 (BZ24406 (50X) , BZ24407 (50X) , BZ24408 (50X))

Volatiles - Soil

Benzene	ND	0.001	112	109	2.7	118	115	2.6	70 - 130	30
Ethylbenzene	ND	0.001	111	108	2.7	116	113	2.6	70 - 130	30
m&p-Xylene	ND	0.002	108	105	2.8	113	110	2.7	70 - 130	30
Methyl t-butyl ether (MTBE)	ND	0.001	90	88	2.2	89	87	2.3	70 - 130	30
Naphthalene	ND	0.005	116	116	0.0	120	119	0.8	70 - 130	30
o-Xylene	ND	0.002	114	112	1.8	120	115	4.3	70 - 130	30
Toluene	ND	0.001	115	112	2.6	123	119	3.3	70 - 130	30

Comment:

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference


Phyllis Shiller, Laboratory Director
October 31, 2017

Tuesday, October 31, 2017

Criteria: MA: CAM, GW1, S1

State: MA

Sample Criteria Exceedances Report

GBZ24406 - IESINC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BZ24406	\$VPHMS-SM	Ethyl Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.41		0.01	mg/Kg
BZ24406	\$VPHMS-SM	MTBE	MA / CAM Protocol / VOA SOIL RL	ND	0.083		0.01	mg/Kg
BZ24406	\$VPHMS-SM	Naphthalene	MA / CAM Protocol / VOA SOIL RL	ND	0.41		0.01	mg/Kg
BZ24406	\$VPHMS-SM	o-Xylene	MA / CAM Protocol / VOA SOIL RL	ND	0.41		0.01	mg/Kg
BZ24406	\$VPHMS-SM	Toluene	MA / CAM Protocol / VOA SOIL RL	ND	0.41		0.01	mg/Kg
BZ24406	\$VPHMS-SM	Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.083		0.01	mg/Kg
BZ24407	\$VPHMS-SM	Naphthalene	MA / CAM Protocol / VOA SOIL RL	ND	0.35		0.01	mg/Kg
BZ24407	\$VPHMS-SM	Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.070		0.01	mg/Kg
BZ24407	\$VPHMS-SM	MTBE	MA / CAM Protocol / VOA SOIL RL	ND	0.070		0.01	mg/Kg
BZ24407	\$VPHMS-SM	o-Xylene	MA / CAM Protocol / VOA SOIL RL	ND	0.35		0.01	mg/Kg
BZ24407	\$VPHMS-SM	Toluene	MA / CAM Protocol / VOA SOIL RL	ND	0.35		0.01	mg/Kg
BZ24407	\$VPHMS-SM	Ethyl Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.35		0.01	mg/Kg
BZ24408	\$VPHMS-SM	Toluene	MA / CAM Protocol / VOA SOIL RL	ND	0.43		0.01	mg/Kg
BZ24408	\$VPHMS-SM	Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.086		0.01	mg/Kg
BZ24408	\$VPHMS-SM	Ethyl Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.43		0.01	mg/Kg
BZ24408	\$VPHMS-SM	MTBE	MA / CAM Protocol / VOA SOIL RL	ND	0.086		0.01	mg/Kg
BZ24408	\$VPHMS-SM	Naphthalene	MA / CAM Protocol / VOA SOIL RL	ND	0.43		0.01	mg/Kg
BZ24408	\$VPHMS-SM	o-Xylene	MA / CAM Protocol / VOA SOIL RL	ND	0.43		0.01	mg/Kg

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedances. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

MassDEP Analytical Protocol Certification Form

Laboratory Name: Phoenix Environmental Laboratories, Inc. **Project #:**

Project Location: 103 WASHINGTON ST SOMERVILLE **RTN:**

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]
BZ24406, BZ24407, BZ24408

Matrices: ☐ Groundwater/Surface Water ☒ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below)

8260 VOC CAM II A ☒	7470/7471 Hg CAM III B ☐	MassDEP VPH CAM IV A ☒	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
8270 SVOC CAM II B ☐	7010 Metals CAM III C ☐	MassDEP EPH CAM IV B ☐	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☐	6020 Metals CAM III D ☐	8082 PCB CAM V A ☐	9012 Total Cyanide/PAC CAM V1 A ☐	6860 Perchlorate CAM VIII B ☐	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature*) in the field or laboratory, and prepared/analyzed with method holding times? (* see narrative)	☒ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☒ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☒ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☒ Yes ☐ No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?	☒ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☒ Yes ☐ No

Responses to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☐ Yes ☒ No
Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350		
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	☒ Yes ☐ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☒ Yes ☐ No

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Authorized
Signature:

Ethan Lee

Date: Tuesday, October 31, 2017

Printed Name: Ethan Lee

Position: Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

October 31, 2017

SDG I.D.: GBZ24406

VOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

CHEM18 10/20/17-1

Jane Li, Chemist 10/20/17

BZ24406, BZ24407, BZ24408

Initial Calibration Verification (CHEM18/VT-M1005):

98% of target compounds met criteria.

The following compounds had %RSDs >20%: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM18/1020M02-VT-M1005) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

100% of target compounds met criteria.

The following compounds did not meet % deviation criteria: None.

The following compounds did not meet maximum % deviations: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 406614 (BZ24582)

BZ24406, BZ24407, BZ24408

All LCS recoveries were within 70 - 130 with the following exceptions: None.

All LCSD recoveries were within 70 - 130 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

PIDFID 10/26/17-2

Caleb Githinji, Chemist 10/26/17

bz24406, bz24407, bz24408

A seven level calibration was performed. All RSDs were within limits.

The continuing calibration standards were within control limits.

The continuing calibration %D for the compound list was less than 25% except for the following compounds:

Samples:

Preceding CC 1026_03.D-RPTVPT - None.

Succeeding CC 1026_47.D-RPTVPT - None.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

October 31, 2017

SDG I.D.: GBZ24406

VPH Narration

Instrument:

QC (Batch Specific):

Batch 407489 (bz24399)

BZ24406, BZ24407, BZ24408

All LCS recoveries were within 70 - 130 with the following exceptions: None.

All LCSD recoveries were within 70 - 130 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

is section MUST be completed with Bottle Quantities.

Analysis Request

[illegible]

A full-page sheet of graph paper featuring a uniform grid of small squares. The grid covers the entire area of the page, providing a template for drawing or writing.

Relinquished by:	Accepted by:	Date:	Time:	RI	CT	MA	Data Format
		10/19/17	13:50	☐ Direct Exposure (Residential)	☐ RCP Cart ☐ GW Protection ☐ SW Protection ☐ GA Mobility	☒ MCP Certification ☐ GW-1 ☒ GW-2 ☐ GW-3	☐ Excel ☐ PDF ☐ GIS/key ☐ EQUIS ☐ Other
		10/19/17	18:12	☐ GW ☐ Other	☐ GB Mobility ☐ Residential DEC ☐ I/C DEC ☐ Other	☐ S-1 ☐ S-2 ☐ S-3 ☐ MWRA eSMART ☐ Other	Data Package ☐ Tier II Checklist ☐ Full Data Package* ☐ Phoenix Std Report ☐ Other
Comments, Special Requirements or Regulations:							

Other ☐ *** SURCHARGE APPLIES**

State where samples were collected: MA *** SURCHARGE APPLIES**

*** SURCHARGE APPLIES**



Tuesday, October 31, 2017

Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Project ID: 103 WASHINGTON ST SOMERVILLE
Sample ID#s: BZ24405

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Phyllis Shiller".

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



SDG Comments

October 31, 2017

SDG I.D.: GBZ24405

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

October 31, 2017

FOR: Attn: Chris Buchanan
IES, Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940

Sample Information

Matrix: SOIL
Location Code: IESINC
Rush Request: Standard
P.O.#:

Custody Information

Collected by:
Received by: B
Analyzed by: see "By" below

Date

10/14/17
10/19/17

Time

10:00
18:12

Laboratory Data

SDG ID: GBZ24405
Phoenix ID: BZ24405

Project ID: 103 WASHINGTON ST SOMERVILLE
Client ID: S-9

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	81		%		10/19/17	Q	SW846-%Solid
MA Petroleum Hydrocarbon (VPH)	Completed				10/27/17	CG	MADEP VPH04

VPH Target Analytes

Benzene	ND	0.084	mg/Kg	50	10/20/17	JLI	SW8260C
Ethyl Benzene	ND	0.42	mg/Kg	50	10/20/17	JLI	SW8260C
m,p-Xylenes	ND	0.42	mg/Kg	50	10/20/17	JLI	SW8260C
MTBE	ND	0.084	mg/Kg	50	10/20/17	JLI	SW8260C
Naphthalene	ND	0.42	mg/Kg	50	10/20/17	JLI	SW8260C
o-Xylene	ND	0.42	mg/Kg	50	10/20/17	JLI	SW8260C
Toluene	ND	0.42	mg/Kg	50	10/20/17	JLI	SW8260C

MA Volatile Petroleum Hydrocarbons (VPH)

C5-C8 Aliphatic Hydrocarbons *1,2	ND	7.5	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	ND	7.5	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	ND	7.5	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
Unadjusted C5-C8 Aliphatics (*1)	ND	7.5	mg/Kg	50	10/27/17	CG	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	ND	7.5	mg/Kg	50	10/27/17	CG	MA VPH 5/2004

QA/QC Surrogates

% 2,5-Dibromotoluene (FID)	98		%	50	10/27/17	CG	70 - 130 %
% 2,5-Dibromotoluene (PID)	104		%	50	10/27/17	CG	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

VPH:

*1 Range data exclude concentrations of any surrogate(s) and/or Internal stds eluting in that range.

*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.

*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbons.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services.

This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

October 31, 2017

Reviewed and Released by: Ethan Lee, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

October 31, 2017

QA/QC Data

SDG I.D.: GBZ24405

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 407489 (mg/Kg), QC Sample No: BZ24399 (BZ24405 (50X))										
<u>Volatile Petroleum Hydrocarbons - Soil</u>										
C5-C8 Aliphatic Hydrocarbons *1,2	ND	5.0	86	80	7.2	79	82	3.7	70 - 130	30
C9-C10 Aromatic Hydrocarbons *1	ND	1.7	96	95	1.0	96	101	5.1	70 - 130	30
C9-C12 Aliphatic Hydrocarbons *1,	ND	5.0	87	86	1.2	85	86	1.2	70 - 130	30
Unadjusted C5-C8 Aliphatics (*1)	ND	5.0	86	80	7.2	79	82	3.7	70 - 130	30
Unadjusted C9-C12 Aliphatics (*1)	ND	5.0	87	86	1.2	85	86	1.2	70 - 130	30
% 2,5-Dibromotoluene (FID)	95	%	93	94	1.1	101	93	8.2	70 - 130	30
% 2,5-Dibromotoluene (PID)	100	%	98	99	1.0	107	99	7.8	70 - 130	30

QA/QC Batch 406614 (mg/Kg), QC Sample No: BZ24582 (BZ24405 (50X))

Volatiles - Soil

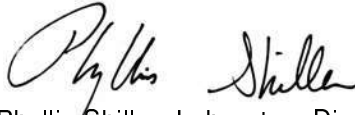
Benzene	ND	0.001	112	109	2.7	118	115	2.6	70 - 130	30
Ethylbenzene	ND	0.001	111	108	2.7	116	113	2.6	70 - 130	30
m&p-Xylene	ND	0.002	108	105	2.8	113	110	2.7	70 - 130	30
Methyl t-butyl ether (MTBE)	ND	0.001	90	88	2.2	89	87	2.3	70 - 130	30
Naphthalene	ND	0.005	116	116	0.0	120	119	0.8	70 - 130	30
o-Xylene	ND	0.002	114	112	1.8	120	115	4.3	70 - 130	30
Toluene	ND	0.001	115	112	2.6	123	119	3.3	70 - 130	30

Comment:

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference


Phyllis Shiller, Laboratory Director
October 31, 2017

Tuesday, October 31, 2017

Criteria: MA: CAM, GW1, S1

State: MA

Sample Criteria Exceedances Report

GBZ24405 - IESINC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BZ24405	\$VPHMS-SM	Toluene	MA / CAM Protocol / VOA SOIL RL	ND	0.42		0.01	mg/Kg
BZ24405	\$VPHMS-SM	o-Xylene	MA / CAM Protocol / VOA SOIL RL	ND	0.42		0.01	mg/Kg
BZ24405	\$VPHMS-SM	Naphthalene	MA / CAM Protocol / VOA SOIL RL	ND	0.42		0.01	mg/Kg
BZ24405	\$VPHMS-SM	MTBE	MA / CAM Protocol / VOA SOIL RL	ND	0.084		0.01	mg/Kg
BZ24405	\$VPHMS-SM	Ethyl Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.42		0.01	mg/Kg
BZ24405	\$VPHMS-SM	Benzene	MA / CAM Protocol / VOA SOIL RL	ND	0.084		0.01	mg/Kg

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

MassDEP Analytical Protocol Certification Form

Laboratory Name: Phoenix Environmental Laboratories, Inc. **Project #:**

Project Location: 103 WASHINGTON ST SOMERVILLE **RTN:**

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]
BZ24405

Matrices: ☐ Groundwater/Surface Water ☒ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below)

8260 VOC CAM II A ☒	7470/7471 Hg CAM III B ☐	MassDEP VPH CAM IV A ☒	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
8270 SVOC CAM II B ☐	7010 Metals CAM III C ☐	MassDEP EPH CAM IV B ☐	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☐	6020 Metals CAM III D ☐	8082 PCB CAM V A ☐	9012 Total Cyanide/PAC CAM V1 A ☐	6860 Perchlorate CAM VIII B ☐	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature*) in the field or laboratory, and prepared/analyzed with method holding times? (* see narrative)	☒ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☒ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☒ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☒ Yes ☐ No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?	☒ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☒ Yes ☐ No

Responses to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☐ Yes ☒ No
Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350		
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	☒ Yes ☐ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☒ Yes ☐ No

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Authorized
Signature:



Date: Tuesday, October 31, 2017

Printed Name: Ethan Lee

Position: Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

October 31, 2017

SDG I.D.: GBZ24405

VOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

CHEM18 10/20/17-1

Jane Li, Chemist 10/20/17

BZ24405

Initial Calibration Verification (CHEM18/VT-M1005):

98% of target compounds met criteria.

The following compounds had %RSDs >20%: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM18/1020M02-VT-M1005) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

100% of target compounds met criteria.

The following compounds did not meet % deviation criteria: None.

The following compounds did not meet maximum % deviations: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 406614 (BZ24582)

BZ24405

All LCS recoveries were within 70 - 130 with the following exceptions: None.

All LCSD recoveries were within 70 - 130 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

PIDFID 10/26/17-2

Caleb Githinji, Chemist 10/26/17

bz24405

A seven level calibration was performed. All RSDs were within limits.

The continuing calibration standards were within control limits.

The continuing calibration %D for the compound list was less than 25% except for the following compounds:

Samples:

Preceding CC 1026_03.D-RPTVPT - None.

Succeeding CC 1026_47.D-RPTVPT - None.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

October 31, 2017

SDG I.D.: GBZ24405

VPH Narration

Instrument:

QC (Batch Specific):

Batch 407489 (bz24399)

BZ24405

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Cooler: Yes ☒ No ☐
 Codant: PK ☐ ICE ☒ No ☐

Temp: 37°C Pg of

CHAIN OF CUSTODY RECORD



587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
 Email: info@phoenixlabs.com Fax (860) 645-0823
 Client Services (860) 645-8726

Data Delivery:

☐ Fax #:

Email: Chuchanan@lesinc.com

Project: 103 Washington St - Springfield Project P.O.:

Report to: Chris Buchanan

Invoice to:

Phone #:

Fax #:

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature _____ Date: _____

Matrix Code:
 DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
 RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe
 OIL=Oil B=Bulk L=Liquid

PHOENIX USE ONLY
 SAMPLE # 24405 Customer Sample Identification S-9 Sample Matrix S Date Sampled 10/19/17 Time Sampled 10AM

Analysis Request

103 W. Washington St
Springfield, MA
01103

Soil VOA Vials (Methanol) 1 H ₂ O	
GL Soil container () 20	
40 ml VOA Vial (As is) 1 HCl	
GL Amber 1000ml (As is) 1 HCl	
PL H ₂ SO ₄ 1250ml [500ml] 1 H ₂ SO ₄	
PL H ₂ SO ₄ 250ml [250ml] 1 H ₂ SO ₄	
PL NaOH 250ml [250ml] 1 NaOH	
Bacteria Bottle	

Revised by: _____ Accepted by: _____

Date: 10-19-17 Time: 13:50

Date: 10-19-17 Time: 18:12

Turnaround: ☐ 1 Day* ☐ 2 Days* ☐ 3 Days* ☒ Standard ☐ Other

Comments, Special Requirements or Regulations:

RI ☐ Direct Exposure (Residential) ☐ GW ☐ Other

CT ☐ RCP Cert ☐ GW Protection ☐ SW Protection ☐ GA Mobility ☐ GB Mobility ☐ Residential DEC ☐ I/C DEC ☐ Other

MA ☒ MCP Certification ☒ GW-1 ☐ GW-2 ☐ GW-3 ☐ S-1 ☐ S-2 ☐ S-3 ☐ MWRA eSMART ☐ Other

Data Format ☐ Excel ☐ PDF ☐ GIS/Key ☐ EQUIS ☐ Other

Data Package ☐ Tier II Checklist ☐ Full Data Package* ☐ Phoenix Std Report ☐ Other

State where samples were collected: MA

* SURCHARGE APPLIES

* SURCHARGE APPLIES

* SURCHARGE APPLIES

* SURCHARGE APPLIES

* SURCHARGE APPLIES

* SURCHARGE APPLIES

* SURCHARGE APPLIES

* SURCHARGE APPLIES

* SURCHARGE APPLIES

* SURCHARGE APPLIES

ATTACHMENT “E”
Soil Disposal Documentation



October 5th, 2017

Donadio Environmental Associates, Inc.
14 Wood Road
Braintree, MA 02184

Re: KRE Company 103 Washington St. Somerville MA

Dear Sir:

Please accept this correspondence as our letter of intent to receive and thermally treat contaminated soils generated by the aforementioned project. Environmental Soil Management, Incorporated (ESMI) will accept such soils upon review and approval of a waste generator profile and required analytical results. ESMI's information is as follows:

Facility Name:	Environmental Soil Management, Inc
Facility Address:	67 International Drive Loudon, NH 03301
Telephone:	603-783-0228
Fax:	603-783-0104
Contact Person	Michael Phelps, Vice President- Sales & Marketing
NH Permit No:	DES-SW-SP-96-002
EPA ID No:	NH5986485852
Emergency Contact:	Steve Bennitt, Compliance Manager
Telephone	603-783-0228
Fax:	603-783-0104

If you have any questions or comments, please do not hesitate to contact us.

Sincerely,

Steve Bennitt

Steve Bennitt
Compliance Manager
Environmental Soil Management, Inc.



BILL OF LADING (pursuant to 310 CMR 40.0030)

3 - 34310

A. LOCATION OF SITE OR DISPOSAL SITE WHERE REMEDIATION WASTE WAS GENERATED:

1. Release Name/Location Aid: AT FRANKLIN STREET
2. Street Address: 103 WASHINGTON STREET
3. City/Town: SOMERVILLE 4. Zip Code: 021430000
- ☐ 5. Check here if the disposal site that is the source of the release is Tier Classified. Check the current Tier Classification Category.
- ☐ a. Tier I ☐ b. Tier ID ☐ c. Tier II

B. THIS FORM IS BEING USED TO: (check one: B1-B4):

- ☐ 1. Submit a **Bill of Lading (BOL)** to transport Remediation Waste to Temporary Storage or a Receiving Facility.
Response Actions associated with this BOL (check all that apply):
- ☐ a. Immediate Response Action (IRA) ☐ e. Comprehensive Response Actions
- ☐ b. Release Abatement Measure (RAM) ☐ f. Limited Removal Action (LRA): (must be retained pursuant to 310 CMR 40.0034(6); can't be submitted via eDEP)
- ☐ c. Downgradient Property Status (DPS) ☐ g. Other _____
- ☐ d. Utility Release Abatement Measure (URAM)
- ☐ 2. Submit an Attestation of Completion of **Shipment to Temporary Storage** (Sections C, F and J are not required):
- ☒ 3. Submit an Attestation of **Completion of Shipment to a Receiving Facility** (Sections C, F and J are not required):
- ☐ 4. Certify that Remediation Waste Was **Not Shipped, and the Bill of Lading is Void**. (Sections C, D, E, and F are not required)
5. Date Bill of Lading submitted to the Department: 10/10/2017 b. eDEP Transaction ID: 961996
(mm/dd/yyyy)
6. Period of Generation Associated with this Bill of Lading 9/5/2017 to 10/20/2017
(mm/dd/yyyy) (mm/dd/yyyy)

(All sections of this transmittal form must be filled out unless otherwise noted above)

The Bill of Lading is not considered complete until the Attestation of Completion of Shipment is received by the Department.

C. DESCRIPTION OF WASTE AND WASTE SOURCE:

1. Contaminated Media/Debris (check all that apply):
- ☐ a. Soil ☐ b. Groundwater ☐ c. Surface Water ☐ d. Sediment ☐ e. Vegetation or Organic Debris
- ☐ f. Demolition/Construction Waste ☐ g. Inorganic Absorbent Materials ☐ h. Other: _____
2. Uncontainerized Waste (check all that apply):
- ☐ a. Inorganic Absorbent Materials ☐ b. Other: _____



BILL OF LADING (pursuant to 310 CMR 40.0030)

3 - 34310

C. DESCRIPTION OF WASTE AND WASTE SOURCE (cont.):

3. Containerized Waste (check all that apply):

☐ a. Tank Bottoms/Sludges ☐ b. Containers ☐ c. Drums ☐ d. Engineered Impoundments

☐ e. Other: _____

4. Estimated Quantity: _____ ☐ Tons ☐ Cu. Yds. ☐ Gallons

5. Contaminant Source (check one):

☐ a. Transportation Accident ☐ b. Underground Storage Tank ☐ c. Brownfields Redevelopment

☐ d. Other: _____

6. Type of Contaminant (check all that apply):

☐ a. Gasoline ☐ b. Diesel Fuel ☐ c. #2 Fuel Oil ☐ d. #4 Fuel Oil ☐ e. #6 Fuel Oil ☐ f. Jet Fuel

☐ g. Waste Oil ☐ h. Kerosene ☐ i. Chlorinated Solvents ☐ j. Urban Fill ☐ k. Other: _____

7. Constituents of Concern (check all that apply):

☐ a. As ☐ b. Cd ☐ c. Cr ☐ d. Pb ☐ e. Hg ☐ f. EPH/TPH ☐ g. VPH

☐ h. PCBs ☐ i. VOCs ☐ j. SVOCs ☐ k. Other: _____

8. If applicable, check the box for the Reportable Concentration Category of the site:

☐ a. RCS-1 ☐ b. RCS-2 ☐ c. RCGW-1 ☐ d. RCGW-2

9. Remediation Waste Characterization Documentation (check at least one):

☐ a. Site History Information ☐ b. Sampling Analytical Methods and Procedures ☐ c. Laboratory Data

☐ d. Field Screening Data ☐ e. Characterization Documentation previously submitted to the Department

i. Date submitted: _____ ii. Type of Documentation: _____

(mm/dd/yyyy)

D. TRANSPORTER OR COMMON CARRIER INFORMATION:

1. Transporter/Common Carrier Name: ENVIRONMENTAL SOIL MANAGEMENT

2. Contact First Name: ANGELA

3. Last Name: HOLUB

4. Street: 67 INTERNATIONAL DRIVE

5. Title: OFFICE MANAGER

6. City/Town: LOUDON

7. State: NH

8. Zip Code: 033070000

9. Telephone: 6037830228

10. Ext: _____

11. Email: _____



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 112

Release Tracking Number

3 - 34310

BILL OF LADING (pursuant to 310 CMR 40.0030)

E. RECEIVING FACILITY/TEMPORARY STORAGE LOCATION:

1. Operator/Facility Name: ENVIRONMENTAL SOIL MANAGEMENT

2. Contact First Name: MICHEAL 3. Last Name: PHELPS

4. Street: 67 INTERNATIONAL DRIVE 5. Title: VP OF SALES

6. City/Town: LOUDON 7. State: NH 8. Zip Code: 033070000

9. Telephone: 6037830228 10. Ext: 11. Email:

12. Type of facility: (check one)

a. Temporary Storage i. Period of Temporary Storage to
(mm/dd/yyyy) (mm/dd/yyyy)

ii. Reason for Temporary Storage:

☐ b. Asphalt Batch/Hot Mix ☐ c. Landfill/Disposal ☐ d. Landfill/Structural Fill ☐ e. Landfill/Daily Cover

☐ f. Asphalt Batch/Cold Mix ☒ g. Thermal Processing ☐ h. Incinerator ☐ i. Other:

13. Division of Hazardous Waste/Class A Permit Number: N/A

14. Division of Solid Waste Permit Number: DES-SW-SP-96-002

15. EPA Identification Number: NH5986485852

F. LSP SIGNATURE AND STAMP:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this submittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and 309 CMR 4.03(2), and (iii) the provisions of 309 CMR 4.03(3), to the best of my knowledge, information and belief, the assessment action(s) undertaken to characterize the Remediation Waste which is (are) the subject of this submittal for acceptance at the facility identified in this submittal comply with applicable provisions of 310 CMR 40.0000, and such facility is permitted to accept Remediation Waste having the characteristics described in this submittal.

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

1. LSP #: _____

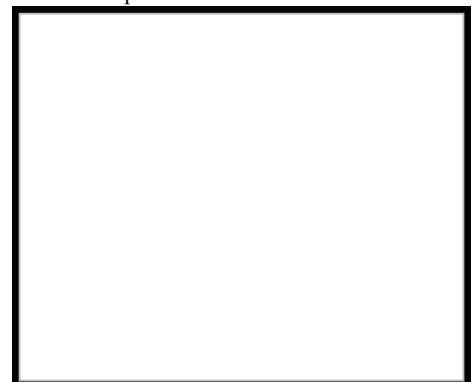
2. First Name: _____ 3. Last Name: _____

4. Telephone: _____ 5. Ext: _____ 6. Email: _____

7. Signature: _____

8. Date: _____
(mm/dd/yyyy)

9. LSP Stamp:





Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 112

Release Tracking Number

3 - 34310

BILL OF LADING (pursuant to 310 CMR 40.0030)

G. PERSON SUBMITTING BILL OF LADING:

1. Check all that apply: ☐ a. change in contact name ☐ b. change of address ☐ c. change in the person undertaking response actions
2. Name of Organization: WASHDEV LLC
3. Contact First Name: PETER 4. Last Name: KOSKORES
5. Street: 22 MCGRATH HIGHWAY STE 206 6. Title: _____
7. City/Town: SOMERVILLE 8. State: MA 9. Zip Code: 021430000
10. Telephone: 9782735775 11. Ext: _____ 12. Email: _____

H. RELATIONSHIP TO SITE OF PERSON SUBMITTING BILL OF LADING:

☐ Check here to change relationship

- ☒ 1. RP or PRP ☒ a. Owner ☐ b. Operator ☐ c. Generator ☐ d. Transporter
- ☐ e. Other RP or PRP Specify: _____
- ☐ 2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)
- ☐ 3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))
- ☐ 4. Any Other Person Undertaking Response Actions: Specify Relationship: _____

I. REQUIRED ATTACHMENT AND SUBMITTALS:

- ☐ 1. Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approvals issued by DEP or EPA. If the box is checked, you must attach a statement identifying the applicable provisions thereof.
- ☐ 2. Check here if any non-updatable information provided on this form is incorrect, e.g. Release Address/Location Aid. Send corrections to BWSC.eDEP@state.ma.us
- ☐ 3. Check here to certify that the LSP Opinion containing the material facts, data, and other information is attached.

J. CERTIFICATION OF PERSON SUBMITTING BILL OF LADING:

1. I, _____, attest under the pains and penalties or perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.
2. By: _____ 3. Title: _____
4. For: WASHDEV LLC 5. Date: _____
- (Name of person or entity recorded in Section G) (mm/dd/yyyy)

J. CERTIFICATION OF PERSON SUBMITTING BILL OF LADING (cont.):

- ☐ 6. Check here if the address of the person providing certification is different from address recorded in Section G.



BILL OF LADING (pursuant to 310 CMR 40.0030)

Release Tracking Number

3 - 34310

J. CERTIFICATION OF PERSON SUBMITTING BILL OF LADING (cont.) :

☐ 6. Check here if the address of the person providing certification is different from address recorded in Section G.

7. Street: _____

8. City/Town: _____ 9. State: _____ 10. Zip Code: _____

11. Telephone: _____ 12. Ext: _____ 13. Email: _____

YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE ASSURANCE FEE OF UP TO \$10,000 PER BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.

Date Stamp (MassDEP USE ONLY):

Received by DEP on 12/7/2017 2:00:21 PM



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 112A

BILL OF LADING (pursuant to 310 CMR 40.0030)

Release Tracking Number

SUMMARY OF SHIPMENT SHEET 1 OF 1

3 - 34310

A. SUMMARY OF SHIPMENT (To be filled out by the receiving facility upon receipt of Remediation Waste):

1. Date of Shipment: (mm/dd/yyyy)	2. Date of Receipt: (mm/dd/yyyy)	3. Number of Loads Shipped:	4. Daily Volume Shipped:		
			☐ yds ³	☒ tons	☐ gals
10/16/2017	10/16/2017	4	130.04		
10/17/2017	10/17/2017	2	63.49		
10/23/2017	10/23/2017	6	186.19		
5. Totals Recorded on this Summary of Shipment Sheet:		12	379.72		



BILL OF LADING (pursuant to 310 CMR 40.0030)
SUMMARY SHEET SIGNATURE PAGE

3 - 34310

A. ACKNOWLEDGEMENT OF RECEIPT OF REMEDIATION WASTE AT RECEIVING FACILITY OR TEMPORARY STORAGE:

1. I, STEVE BENNITT, attest under the pains and penalties or perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

2. By: STEVE BENNITT 3. Title: _____

4. For: ESMI 5. Date: 12/7/2017
(mm/dd/yyyy)

6. Date of Final Shipment associated with this Bill of lading: 10/23/2017
(mm/dd/yyyy)

B. ACKNOWLEDGEMENT OF SHIPMENT AND RECEIPT OF REMEDIATION WASTE BY PERSON CONDUCTING RESPONSE ACTIONS ASSOCIATED WITH THIS BILL OF LADING:

1. I, DANIEL G JAFFE, attest under the pains and penalties or perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

2. By: DANIEL G JAFFE 3. Title: _____

4. For: WASHDEV LLC 5. Date: 12/7/2017
(Name of person or entity recorded in Section G) (mm/dd/yyyy)

☒ 6. Check here if the address of the person providing certification is different from address recorded in BWSC112 Section G.

7. Street: IES, INC.50 SALEM ST. SUITE108

8. City/Town: LYNNFIELD 9. State: MA 10. Zip Code: 019400000

11. Telephone: 6176238880 12. Ext: _____ 13. Email: djaffe@iesinc.com

☒ 14. Check here if attaching optional supporting documentation such as copies of Load Information Summary Sheets

Customer Usage by Date

Date Run: 12/6/2017
Time Run: 3:11:24PM

Ticket Date	Ticket Number	Truck/Trailer ID	Material ID	Unit	Net	Material	Delivery	Tax/Misc.	Total
Customer: DE10			DONADIO ENVIRONMENTAL S						
Order: 11415			KRE Company						
103 Washington St.			Somerville			MA			
10/16/17	318976	MYSTIC30	GS01		33.810	tn			
10/16/17	318982	MYSTIC31	GS01		31.710	tn			
10/16/17	318998	MYSTIC30	GS01		32.180	tn			
10/16/17	319002	MYSTIC31	GS01		32.340	tn			
10/17/17	319021	MYSTIC30	GS01		31.470	tn			
10/17/17	319042	MYSTIC30	GS01		32.020	tn			
10/23/17	319182	MYSTIC30	GS01		30.670	tn			
10/23/17	319185	MYSTIC31	GS01		32.930	tn			
10/23/17	319193	OSBUR50	GS01		33.370	tn			
10/23/17	319197	OSBURN45	GS01		34.980	tn			
10/23/17	319202	MYSTIC30	GS01		32.500	tn			
10/23/17	319205	MYSTIC31	GS01		21.740	tn			
GASOLINE Totals					379.720	tn			
Total Tickets: 12									
KRE Company Totals					379.720	tn			
Total Tickets: 12									
DONADIO ENVIRONMENTAL SERVICES Totals					379.720	tn			
Total Tickets: 12									
Grand Totals					379.720	tn			
Total Tickets: 12									

ATTACHMENT “F”

MCP Method 1 Risk Characterization

Method I Risk Characterization
for Chemical Residuals
in Soil & Groundwater

RTN 3-34310

103 Washington Street
Somerville, MA

Prepared by:

IES Inc.
50 Salem Street, Building A-Suite 108
Lynnfield, MA 01940
December 8, 2017



TABLE OF CONTENTS

SECTION	PAGE
1. Conceptual Site Model/Nature and Extent of Release	3
2. Site Geology	6
3. Relationship to Other RTN's (310 CMR 40.1056[d])	6
4. Subsurface Investigations	7
5. Activities and Uses of Groundwater at the Disposal Site	13
6. Activities and Uses of Land at the Disposal Site	13
7. Soil and Groundwater Categories	13
8. Comparison of Exposure Point Concentrations	14
9. Feasibility Analysis	16
10. Characterization of Risk to Safety	17
11. Uncertainty Analysis	18
12. Imminent Hazard Evaluation	18
13. Identification of Human Receptors	20
14. Identification of Environmental Receptors	20
15. Evaluation of Risk of Harm to Safety	21
16. Evaluation of Risk of Harm to the Environment	21
17. Evaluation of Risk of Harm to Public Health and Welfare	22
18. Risk Characterization Conclusion	22

MCP METHOD 1 RISK CHARACTERIZATION

Risk characterizations under the Massachusetts Contingency Plan (310 CMR 40.0000) are performed in accordance with the DEP's July 1995 Final Interim Policy "Guidance for Disposal Site Characterization in Support of the MCP" (BWSC/ORS-95-141); and Subpart I of the MCP (310 CMR 40.0970). The purpose of a Risk Characterization is to evaluate the risk of harm to health, safety, public welfare, and the environment.

Pursuant to 310 CMR 40.0971(1), "Method 1 may be used to characterize the risk of harm to health, public welfare and the environment at disposal sites where assessments conducted in accordance with 310 CMR 40.0000 have determined that the presence of oil and/or hazardous material is limited to soil and/or groundwater. This is the case regarding the gasoline contamination identified at the Disposal Site associated with RTN 3-34310, and as such a Method 1 Risk Characterization is applicable to this Disposal Site.

The following is a description of the release as well as the current and foreseeable Activities and Uses of the Disposal Site as described in 310 CMR 40.0923.

1. Conceptual Site Model/Nature and Extent of Release

A conceptual site model (CSM) is a basic description of how contaminants enter a system, how they are transported within the system (or redistributed within the system) and where routes of exposure to humans and organisms occur.

According to the USGS Boston North, MA Quadrangle Map, the site is situated approximately seventeen (17) feet above mean sea level, as shown in **Figure 1, Attachment "A"** of this Report. The subject site is identified by the City of Somerville Assessor's Department as Parcel ID #104-A-60 as shown in **Figure 2, Attachment "A"**. In addition, site plans depicting the horizontal extent of the release and other site features are shown in Figures 3 and 4 in **Attachment "A"**, which for all intents and purposes includes the limits of the Disposal Site.

The subject site containing the "Disposal Site" associated with RTN 3-34310 consists of one, 0.13-acre, irregular-shaped parcel of land located at 103 Washington Street in the City of Somerville, MA. The site building is currently vacant, but was last utilized as an automobile repair shop (County Auto Repair), which vacated the premises in early 2017; and plans call for future mixed-use development of the site.

A review of Sanborn Historical Atlases (dated 1888, 1900, 1933, 1950, 1989 and 1991) and City of Somerville Inspectional Services and Fire Prevention Office records revealed that in 1888 the subject site was occupied by a two-story building constructed on a larger lot that included a "cobbler" shop at present day 99-101 Franklin Street. By 1900, the two-story building had been reduced in size, and the cobbler shop had been replaced by the existing house at the abutting property at 99-101 Franklin Street.

According to City of Somerville records, the current building was constructed in 1920. Subsequently, in April of 1931, a "Certificate of Registration" was issued by the Commonwealth of Massachusetts for the storage of an unknown quantity of flammable liquids at the site. As depicted on the 1933 Sanborn Atlas, the site property lines were redrawn to their current configuration and the original two-story building had been replaced by a "filling station" with three "gasoline tanks," located along the north property line adjacent to Franklin Street.

In 1950, a license was issued by the City of Somerville to store a 100-gallon drum of "anti-freeze alcohol" on-site. Between 1956 and 1999, a license was issued by the City of Somerville to the owner at that time (John Beucler) to store "4 automobiles" on site. In February of 1958, Fire Department records show a 1,000-gallon gasoline tank was removed from "Beucler Gasoline Station." In May 1962, the Commonwealth of Massachusetts Department of Public Safety - Division of Fire Prevention issued to "Aquino Auto Sales & Services, Inc." at 103 Washington Street, a registration for "10,000 gallons of gasoline, 1,000 gallons of waste oil, 110 gallons of fuel oil, 20 gallons of alcohol, 50 gallons of motor oil, 8 gallons of grease, and 100 gallons of anti-freeze alcohol." Further details about the expanded gasoline storage capacity at the site are limited to an undated plan in Fire Department files showing the proposed locations for the installation of two 4,000 gallon USTs, east of the site building. Later, in September of 1962, Somerville Fire Department records indicate a "1,000 gallon, empty gasoline tank" was removed from the site.

In 1985, a Somerville Fire Prevention Office inventory of underground storage tanks at "Aquino Auto Sales & Services, Inc." listed the presence of four, on-site, steel tanks, including 3,000-gallon and 2,000-gallon USTs containing gasoline, a 1,000-gallon UST containing waste oil, and a 275-gallon AST containing fuel oil. In May of 1987, Fire Prevention Office documents indicate that these tanks were excavated and removed from the site, although it should be noted that neither a UST Closure Report nor a "receipt of disposal" for the tanks was discovered in City files. Similarly, the City of Somerville Bureau of Fire Prevention and Investigations stated in a letter dated June 1987, that the tank removal contractor (L&M Construction) "returned one (1) of the four (4) tanks [L&M excavated] to its original location in Somerville, and just dumped same into the excavation pit."

Following the removal of the storage tanks in 1987, gasoline sales at the site ceased, and the site was used exclusively for automobile repair operations (County Auto Repair.) According to the 1989 Sanborn Atlas, the filling station building had been expanded to include two automobile repair bays at the northwest end of the building. A Fire Department record of "Yearly Maintenance Permits" for OHM (dated June 2013) indicates that County Auto Repair stored on-site in above ground containers, "250 gallons of Motor Oil, 4 - 55 gallon drums of Waste Oil, 275 gallons of Heating Oil (outside), and 5 - 55 gallon drums of Antifreeze." Automotive repair operations were discontinued at the site earlier this year when the building was purchased by the current owner in February of 2017; and the site building has remained vacant since that time.

The area addressed by this Permanent Solution Statement (i.e. the “Disposal Site”) includes the southern and southeastern portions of the 0.13-acre property located at 103 Washington Street in Somerville, MA (see Figures 3 and 4 in **Attachment “A”**).

The Disposal Site is located in a mixed residential and commercial section of Somerville, and is abutted to the south by Washington Street; to the east by Franklin Street; to the north by a multi-family dwelling at 99-101 Franklin Street; and to the west by a dwelling at 105 Washington Street. The area located further to the south of the site, across Washington Street, is occupied by a parking lot and an abandoned retail plaza (The Cobble Hill Center) at 102 Washington Street; and the area located further to the east of the site, across Franklin Street, is occupied by a bar (Michael’s) at 97 Washington Street, and further to the east is a vehicle repair shop at 91 Washington Street.

It is noted that the area of the Disposal Site (i.e. the area of contamination addressed by this Permanent Solution Statement for RTN 3-34310) is entirely contained within the property boundary identified as 103 Washington Street, Somerville, MA.

Using a CSM approach, based on the extent of the soil contamination observed during the initial subsurface investigation conducted in April of 2017 and the subsequent RAM excavation activities conducted in September and October of 2017, it is theorized that the source of the gasoline contamination in the soil at the site associated with RTN 3-34310 is attributed to incidental spillage and or piping leaks at the pump island associated with the former gasoline station at the site, which operated from the 1930’s through 1987.

Prior reports prepared for or relating to the subject site include the following:

1. “Soil Vapor Sampling Results”, dated June 8, 2007 by GEI Consultants, Inc. of Winchester, MA (see Section 3 below).
2. “Limited Subsurface Investigation” (99 Franklin Street), dated July 17, 2013, by Harvey Associates of Hingham, MA
3. “Phase 1 Environmental Site Assessment” report, dated March 24, 2017, by IES, Inc. of Lynnfield, MA.
4. “Subsurface Investigation” report, dated April 24, 2017, by IES, Inc.
5. “Release Abatement Measure (RAM) Plan Submittal”, dated June 5, 2017, by IES, Inc.
6. “Release Abatement Measure (RAM) Status Report #1”, dated October 3, 2017, by IES, Inc.
7. “Release Abatement Measure (RAM) Completion Statement” report, dated December 8, 2017, by IES, Inc.

Based on PID readings and the gasoline odor noted in the soil, along with laboratory testing of soil and groundwater samples, it appears that the gasoline release at the site originated at former pump island, where it was discovered at about 2-4 feet below ground surface (bgs) in the general vicinity of the pump island and associated UST piping. From there it “coned out”, extending to greater depths further away from the source area. The depth of contamination was greatest (approximately 12.5 feet bgs) near the corner of Washington Street and Franklin (IES-4) and became shallower towards the north.

The absence of any indication of a reportable release in the soil and/or groundwater at test borings/monitoring wells IES-1 and IES-2 and at the northerly abutting property at 99 Franklin Street indicated that the former gasoline UST's at the site were not the source of the release.

2. Site Geology

The surficial geology of the site was observed during the test boring program performed by IES in April of 2017. The geology at IES-1 dominated by wet gravel tainted with a gasoline odor and sheen, which is indicative of a tank grave; while the geology at IES-2 was dominated by dense, dry clay. Test boring IES-3 encountered refusal at 2½ feet below grade, and the geology at this location consisted of sandy fill material; while soil encountered at boring IES-4 was dominated by dense, dry to damp clay, with a sandy clay layer at 13 to 15 feet below grade. At test boring IES-5, the soil in was dominated by dry, dense clay containing a slight, unidentifiable odor; and at IES-6, soils were dominated by dense, dry, yellow clay with a few, thin sandy layers.

Additional observations during the RAM excavation revealed that the upper soils consisted of Urban Fill at least to an approximate depth of 5-6 feet below ground surface, consisting of concrete, brick, etc. in the area near the pump island

Finally, according to the "Bedrock Geologic Map of Massachusetts" (Zen, 1983), the underlying bedrock in the area of the site is identified as the Cambridge Argillite (Proterozoic Z to earliest Paleozoic), which consists of gray argillite and minor quartzite; rare sandstone and conglomerate; and contains acritarchs.

3. Relationship to Other RTN's (310 CMR 40.1056[d])

In addition to the gasoline release associated with RTN 3-34310, the property at 103 Washington Street, has also been affected by a release of Chlorinated Volatile Organic Compounds (CVOC's), which originated from the property at 50 Tufts Street that is associated with RTN 3-23246.

Response actions associated with RTN 3-23246 are being conducted by GEI Consultants, and based on results of a 2007 soil vapor sample collected from beneath the building slab of the on-site garage at 103 Washington Street, it was determined that elevated levels of Chlorinated Volatile Organic Compounds (CVOCs) were impacting the site from a contaminant plume originating from an upgradient source located 50 Tufts Street. GEI Consultants, Inc. recommended that a Sub-Slab Depressurization System (SSDS) be installed at the site to provide a permanent solution "to prevent the VOCs from infiltrating into [the] building."

According to GEI, an "active sub-slab depressurization system (SSDS)" was installed in the subject site (i.e. 103 Washington Street) in 2007, which consisted of the installation of sub-slab vapor extraction points and PVC piping connected to an electric fan located outside of the building. In the most recent round of testing on November 9, 2016, the active SSDS

system was shut down and the indoor air and sub-slab soil vapor were tested. “PCE was detected at concentrations of 1.5 micrograms/cubic meter ($\mu\text{g}/\text{m}^3$) in the office space and 1.8 $\mu\text{g}/\text{m}^3$ in the garage space,” which are both “below the TV’s (threshold values) for commercial/industrial indoor air.” However, beneath the building slab “PCE was detected at 1,210 $\mu\text{g}/\text{m}^3$ and TCE was detected at 24 $\mu\text{g}/\text{m}^3$ ”, which for PCE “is greater than the MassDEP commercial/industrial soil vapor screening level.

The most recent report for RTN 3-23246 referencing the property at 103 Washington Street is a “Phase V Status Report No. 12 and Remedial Monitoring Report No. 27” dated August 2, 2017, prepared by GEI. According to this report, “the property located at 103 Washington Street is being redeveloped into commercial and residential space by KRE Company” and that “based on communications with KRE Company, the building is now vacant and will remain vacant until demolition and construction of the new building”. Therefore, GEI noted that “since the building is not occupied, there is not a complete vapor intrusion pathway”, and accordingly, “GEI observed the removal of the SSDS fans and remote telemetry system at the building on May 31, 2017.” GEI stated that they are communicating with KRE Company concerning potential vapor mitigation controls that may be incorporated into the new building construction, if necessary.

A “Disposal Site Map and Site Boundary” plan contained in GEI’s August 2, 2017 submittal depicts monitoring wells IES-1, IES-2, IES-4, IES-5, and IES-6 at the subject site. This map and also depicts the subject property at 103 Washington Street as being within the “Disposal Site Boundary” for RTN 3-23246; within the “extent of PCE concentration in shallow groundwater greater than or equal to 50 $\mu\text{g}/\text{l}$ ”; and also within the “extent of PCE concentration in shallow groundwater greater than or equal to 20 $\mu\text{g}/\text{l}$ ”;

More recent reports regarding RTN 3-23246 include a “Partial Permanent Solution Statement for 0 Franklin Street, Somerville, Massachusetts”, dated September 21, 2017; a “Partial Permanent Solution Statement for 86 Franklin Street, Somerville, Massachusetts”, dated October 26, 2017; and a “Partial Permanent Solution Statement for 51-51A Tufts Street, Somerville, Massachusetts” dated November 21, 2017, all prepared by GEI. Each of these reports contain a regional site plan, which indicates that the subject site at 103 Washington Street is located within the “Disposal Site Boundary” of RTN 3-23246; and is also located within the “extent of PCE concentration in shallow groundwater greater than or equal to 50 $\mu\text{g}/\text{l}$.”

However, RTN 3-23246 is considered a separate release (different contaminants originating from an off-site source), which is currently being addressed by others, and was not evaluated in this Method 1 Risk Characterization associated with the corresponding Permanent Solution Statement for RTN 3-34310.

4. Subsurface Investigations

Subsurface investigations have been conducted at the subject site at 103 Washington Street in April of 2014; and at the northerly abutting property at 99 Franklin Street in July of 2013, which are summarized below:

July 17, 2013 “Limited Subsurface Investigation” (99 Franklin Street)

According to a “Limited Subsurface Investigation” report conducted at the northerly abutting property by Harvey Associates of Hingham, MA, two soil borings (B-1 and B-2) were advanced along southern edge of that property, immediately adjacent to the northern property line of the subject site. The purpose of Harvey’s investigation was “to evaluate potential subsurface impacts” caused by buried gasoline tanks and historical usage of the subject site (103 Washington Street). According to this report, B-1 and B-2 were completed on the southwest and southeast sides of the site, respectively, to a depth of 20 feet below ground surface (bgs). Soil samples collected from the surface to the total depth of each boring were screened for organic vapors in the field using a photoionization detector (PID); no organic vapors were detected in any of the five soil samples screened from each boring. In addition, one soil sample from B-2, collected from the estimated water table (at 15 feet bgs), was laboratory analyzed for VPH and EPH. “Low concentrations of aromatic and aliphatic hydrocarbons were detected,” but at concentrations “well below any action levels.”

According to the Harvey report, borings B-1 and B-2 were completed as groundwater monitoring wells (MW-1 and MW-2, respectively). The water table in MW-1 was measured at 12 feet below ground surface (bgs), and MW-2 was “dry;” a condition attributed by Harvey to low permeability, “greenish blue clay” encountered in both wells from approximately 2 feet bgs to 20 feet bgs. Groundwater samples collected from MW-1 were laboratory tested for VPH and EPH compounds, and the results of groundwater testing revealed “no aromatic or aliphatic compounds above laboratory detection limits.”

As such, Harvey concluded that based on laboratory testing, 99 Franklin Street “does not appear to have any subsurface impacts to soil and/or groundwater from potential petroleum contaminants typically associated with the current and historical use of [103 Washington Street]. Harvey also concluded that 99 Franklin Street lies topographically above (upgradient of) the subject site, and the “dense clay” substrate “likely impedes contaminant migration” northward from 103 Washington Street. Therefore, based on these findings, petroleum hydrocarbons (as measured by VPH and EPH testing) are not likely to be migrating across the property line between 99 Franklin Street and 103 Washington Street.

April 24, 2017 “Subsurface Investigation”

A subsurface investigation was conducted at the site by IES in April of 2017, and consisted of the advancement of six (6) on-site test borings (IES-1 through IES-6), with monitoring wells installed in five of the six borings (IES-1, IES-2 and IES-4 to IES-6). In addition, a 1” diameter, hand-driven soil auger was advanced to 5 to 6 feet below grade at three locations in the east side parking lot, to search for the two “proposed, 4,000 gallon USTs” identified on an undated site plan discovered in City of Somerville Fire Prevention Office files. No underground tanks were discovered by the probes, suggesting that the USTs had been removed, or were never installed.

The test borings were advanced by TDS, Inc. of Sterling, MA using a “6610 geoprobe” tracked vehicle, which employs direct push percussion technology to advance the drill string. Continuous soil samples were collected in disposable plastic sleeves inserted into a 2” diameter, stainless-steel sampling tube, from the surface to 15.0 feet below grade.

Representative soil samples from each interval were collected in the field and immediately placed into pre-cleaned, 8 oz. jars for headspace screening.

Test boring/monitoring well IES-1 was placed in the northeast corner of the east side parking lot, adjacent to Franklin Street and downgradient of three, former gasoline and waste oil USTs located along the north property line. Soils encountered in the boring were dominated by wet gravel tainted with a gasoline odor and sheen, which is indicative of a tank grave. Test boring/monitoring well IES-2 was placed on the east side of the site, adjacent to Franklin Street and downgradient or cross gradient of the location of the two “proposed, 4,000 gallon USTs”.

Test boring B-3 was advanced in the center of the former filling station pump island, southeast of the site building, but encountered rock refusal at 2½’ below grade. Test boring/monitoring well IES-4 was advanced in the southeast corner of the parking lot, adjacent to the corner of Franklin and Washington Streets, and downgradient of the repair shop, former filling station pump island, and former tank grave. Test boring/monitoring well IES-5 was advanced in the northwest corner of the site, upgradient of the site building and former tank grave. Finally, test boring/monitoring well IES-6 was installed in the center of the southwest repair bay inside the site building, adjacent to a former, in-ground, hydraulic lift.

The soil samples obtained from the test-boring program were screened with a MiniRae Lite Photoionization Detector (PID) to detect the presence of Volatile Organic Compounds (VOC’s) in soil headspace. Test boring/monitoring well locations are shown in Figure 3 in **Attachment “A”**; soil sample screening results are summarized in Table 1 in **Attachment “B”**, and test boring logs are included in **Attachment “C”** of this submittal.

The results of the soil screening program revealed the presence of significantly elevated VOC concentrations in soil samples collected from IES-1 (up to 235 ppmv) and IES-4 (up to 854 ppmv), likely due to their locations on the downgradient edges of the former tank grave. IES-2, also located on the eastern edge of the former tank grave, is notable for the lack of organic vapors, likely due to the impermeability of the dense clay surrounding the tank grave. Low concentrations of organic vapors (<10 ppmv) were detected in borings B-3, IES-5 and IES-6. Soil samples located close to, or above the perceived water table were submitted to Phoenix Environmental Laboratories, Inc. of Manchester, CT for laboratory analysis.

Soil samples IES-1/S-2 (5-10 feet) from a wet sand and gravel horizon, and IES-4/S-5 (10-15 feet) from a clay-rich horizon, were laboratory analyzed for Volatile Petroleum Hydrocarbons (VPH) and target Volatile Organic Compounds (VOC’s) to identify gasoline and associated compounds. Clay-rich soil sample IES-5/S-4 (10-15 feet) was laboratory analyzed for Volatile Organic Compounds (VOCs) via EPA 8260 in order to address the chlorinated solvents known to impact the site from a plume originating from the DEP Disposal site at 50 Tufts Street (RTN 3-23246). Finally, soil sample IES-6/S-2 (5-10 feet) was laboratory analyzed for Extractable Petroleum Hydrocarbons (EPH) with target Polycyclic Aromatic Hydrocarbons (PAHs) in order to address compounds typically found in hydraulic oil, motor oil and urban fill.

The results of the soil testing program revealed the presence of elevated levels of C₅-C₈ Aliphatic Hydrocarbons (1,700 mg/kg), C₉-C₁₀ Aromatic Hydrocarbons (640 mg/kg), C₉-C₁₂ Aliphatic Hydrocarbons (1,900 mg/kg) and Naphthalene (5 mg/kg) in soil sample IES-4/S-5 above the applicable RCS-1 reportable concentrations of 100 mg/kg, 100 mg/kg, 1,700 mg/kg and 4 mg/kg, respectively. Therefore, a reportable release to the soil was identified at the site with regard to RTN 3-34310

The results of the soil testing program for soil sample IES-1/S-2 revealed elevated levels of the same VPH compounds as in IES-4, plus m,p-xylenes, but all at concentrations below applicable RCS-1 reporting criteria. Likewise, two EPH compounds in IES-6/S-2, and three VOC's in IES-5/S-4 were detected at elevated levels, but all below RCS-1 standards. It should be noted that two of the VOCs detected in IES-5 (PCE and TCE) were first detected at the site in sub-slab soil gas by GEI in 2007, and their presence at the site is linked to a documented release of similar compounds at the Disposal Site located at 50 Tufts Street (RTN 3-23246), and are not related to RTN 3-34310. Laboratory results of the soil testing program are summarized in Table 2 in **Attachment "B"** of this report.

As part of the April 2017 subsurface investigation, groundwater samples collected from the five newly installed monitoring wells (IES-1, IES-2, IES-4, IES-5 and IES-6). The wells were purged of at least six volumes of standing water, and until the suspended sediment cleared. The groundwater samples were collected utilizing a low flow/low stress peristaltic pump and preserved according to EPA guidelines published in 40 CMR 136. The groundwater samples were forwarded to Phoenix Environmental Laboratories, Inc. of Manchester, CT for laboratory analysis for VPH with target analytes at monitoring wells IES-1, IES-2 and IES-4; for EPH with target PAH's at monitoring wells IES-1 and IES-4; for dissolved RCRA 8 Metals at monitoring well IES-1; and for VOC's via EPA Method 8260 at monitoring wells IES-1, IES-5 and IES-6.

The results of this testing program revealed the presence of elevated levels of Tetrachloroethene (0.2 mg/l) and Trichloroethene (0.046 mg/l) above the applicable reportable concentrations (RCGW-2) of 0.05 mg/l and 0.005 mg/l, respectively in groundwater monitoring well IES-5. However, this contamination has been delineated within the contaminant plume associated with RTN 3-23246 at 50 Tufts Street, and is not associated with RTN 3-34310. It is also noted that since the site building is currently vacant, an Imminent Hazard (IH) condition has not been identified at the site.

In addition, as shown in Table 3 in **Attachment "B"**, slightly elevated levels of two other VOC's (cis-1,2-Dichloroethene and MTBE) were detected in the laboratory analysis of the groundwater in IES-5; four VOC's (Acetone, MEK, MTBE, and PCE) were detected in IES-6; VPH compounds and target VOC's were detected in IES-4; several PAH's were noted in IES-4; and Naphthalene, dissolved Barium, and dissolved Selenium were detected in groundwater samples obtained from monitoring well IES-1. However, it is noted that all of these detections were at concentrations below RCGW-2 reporting standards. Notable too was the lack of VPH and EPH compounds detected above laboratory testing equipment detection limits in IES-1 and IES-2, which are located in and adjacent to the former UST grave. Laboratory results and the Chain-of-Custody are included in **Attachment "D"** of this report.

In summary, the CVOC's detected in groundwater above Reportable Concentrations at the site are associated with RTN 3-23246, and a reportable release to the groundwater associated with the gasoline release associated with RTN 3-34310 has not been identified at the site.

September-October 2017 Release Abatement Measure (RAM):

Response actions conducted at the site were performed in accordance with a "Release Abatement Measure (RAM) Plan" dated June 5, 2017. As indicated in the RAM Plan and detailed in a "RAM Completion Statement" report submitted via eDEP concurrently with this report, the objective of the RAM was to reduce, or eliminate if possible, the gasoline (i.e. VPH) contamination present in the soil at the site. The cleanup goal was the applicable Method 1 S-1/GW-2/GW-3 standards, or background, if feasible. In order to achieve this objective, IES has proposed the excavation, and off-site disposal of up to 500 cubic yards of contaminated soil.

Excavation activities conducted as part of this RAM commenced on September 5, and continued on September 7, 8, 11, and 16 and October 17, 18, 19, and 23, 2017. The excavation was initiated at the southeastern corner of the site, where the highest levels of gasoline contamination had been identified during a previous subsurface investigation conducted by IES in April of 2017 (IES-4). The excavation was performed by Global Contracting Services, Inc. of Taunton, MA, under contract with Donadio Environmental Associates, Inc. (DEA) of Braintree, MA.

The excavation extended to a depth of approximately 10-12.5 feet below ground surface (bgs), and during the excavation, periodic soil sample screening was performed utilizing a MiniRae Lite Photoionization Detector (PID) to detect the presence of Volatile Organic Compounds (VOC's) in soil headspace. The excavation proceeded outward in all directions until such time as no significantly elevated headspace readings were detected in the soil samples (<75 ppm) to the north, south, and east, and west. The excavation also was advanced downward until no significantly elevated headspace screening results were encountered, and it is noted that groundwater was not encountered during the RAM excavation activities.

Based on PID readings and the gasoline odor noted in the soil, it was determined that the gasoline release at the site originated at the former pump island, where it was discovered at about 2-4 feet below ground surface (bgs) in the vicinity of the pump island and associated UST piping. From there it "coned out", extending to greater depths further away from this suspect source. The depth of contamination was greatest (approximately 12.5 feet bgs) near the corner of Washington Street and Franklin (IES-4) and became shallower towards the north.

At the completion of the excavation, a total of twelve (12) soil samples were obtained from the sidewalls and base of the excavation (SS-1 through SS-12), with the locations of the soil samples shown in **Attachment "A"**, Figure 4. The extent of the excavation was determined to the south by Washington Street (SS-1 and SS-5); to the east by Franklin Street (SS-3); to the north and west by low PID readings (SS-4, SS-6, SS-9, SS-10, and SS-11), and vertically to a depth of 10-12.5 feet (SS-2, SS-7, and SS-8). Further excavation to the south and east was not performed so as not to undermine the sidewalks along Washington and Franklin

Streets; and the excavation did not extend deeper than 12.5 feet so as not to encounter groundwater.

From September 7 through 16, 2017 a total of 193.52 tons of gasoline-contaminated soil was initially excavated and stockpiled on and covered with polyethylene sheeting at the site. This stockpile was also covered with polyethylene sheeting. Due to the fact the limited area available to stockpile the excavated soil, it was decided to remove the existing soil stockpile from the site and live load the remaining soil (186.2 tons) to be excavated in accordance with the RAM Plan (379.72 tons total).

In order to determine disposal options for contaminated soil excavated at the site as part of this RAM, three composite soil samples (S-1, S-1A, and S-2A) were obtained from the soil stockpile and the westerly sidewall of the excavation, in order to live load the remaining in-situ gasoline contaminated soil in accordance with the aforementioned RAM Plan. These samples were submitted to Phoenix Environmental Laboratories, Inc. of Manchester, CT to be characterized for disposal. The composite samples were comprised of a total of up to eight soil sampling locations from both the soil stock pile (i.e. excavated soil) and the western sidewall of the excavation, where further excavation was to continue.

The composite soil characterization samples were tested by Phoenix Environmental Laboratories, Inc. of Manchester, CT for VOC's via EPA Method 8260; Total Petroleum Hydrocarbons (TPH) via EPA Method 8100; PCBs via EPA Method 8081; Arsenic, Cadmium, Chromium, Lead, and Mercury; Toxicity Characteristic Leaching Procedure (TCLP) for Lead; and Corrosivity. In addition, the composite soil characterization sample was also analyzed for Flash Point, Ignitability, pH, Reactivity Cyanide, Reactivity Sulfide, and Reactivity.

The results of the soil characterization program were submitted Environmental Soil Management, Inc. (ESMI) of Loudon, NH for approval (see Table 5 in **Attachment "B"** for soil characterization testing results and **Attachment "D"** for laboratory reports). Upon approval from ESMI, the contaminated soil generated as part of the RAM for RTN 3-34310 at 103 Washington Street, Somerville, MA was transported to their facility in Loudon, NH on October 16, 2017 (four loads), October 17, 2017 (two loads) and October 23, 2017 (six loads). The soil was transported by Mystic Motor Trans, Inc. under a Bill of Lading (BOL) in accordance with the MCP provisions of the aforementioned RAM Plan (see **Attachment "E"** for Soil Disposal Documentation).

In order to determine if the contaminated soil (above MCP Method 1 S-1/GW-2 and S-1/GW-3) standards had been removed, eight of the twelve soil samples obtained from the base of the sidewalls of the excavation (SS-1 through SS-7 and SS-9) were forwarded to Phoenix Analytical Laboratories, Inc. in Manchester, MA for testing for Volatile Petroleum Hydrocarbons (VPH) with target Volatile Organic Compounds (VOC's). Due to low headspace screening results, soil samples SS-8 (4 ppmv) and SS-10 through SS-12 (0 ppmv) were not submitted for laboratory analysis.

As shown in Tables 4 and 4A in **Attachment “B”** of this submittal, no VPH compounds or target analytes were detected above laboratory quantitation limits in any of the post-RAM excavation confirmatory samples tested.

In summary, the RAM conducted at 103 Washington Street for RTN 3-34310 consisted of the excavation of a total of 379.72 tons of gasoline contaminated soil, which was disposed of at the EMSI facility in Loudon, NH. Confirmatory testing of sidewall and bottom samples of soil remaining after the completion of the RAM excavation activities indicated that no VPH compounds or target VOC's were detected, above laboratory quantitation limits, in any of the samples tested. Therefore, the objectives of the RAM, as stated in the June 5, 2017 RAM Plan, have been met.

5. Activities and Uses of Groundwater at the Disposal Site

The groundwater at the site is not located within a current or potential drinking water source area. In addition, there are no private drinking water sources at the site, and the groundwater is also not utilized for irrigation purposes. In summary, the groundwater at the site is not used for any purposes, and will not be used for any purposes in the foreseeable future.

6. Activities and Uses of Land at the Disposal Site

The property at 103 Washington Street, which contains the “Disposal Site” associated with RTN 3-34310 is currently occupied by a vacant, one-story garage, which will be demolished to allow for future mixed-use development of the site. Specific plans for future redevelopment have not been finalized, however, despite the long commercial history of the site, based on the proposed development activities, the foreseeable use of the site is mixed use commercial/residential, and therefore, this Method 1 Risk Characterization operates on the conservative premise that the site will be utilized residentially in the future.

No operation, maintenance, and/or monitoring will be required to confirm and/or to maintain the conditions at the disposal site upon which this Permanent Solution is based. This also confirms that this Permanent Solution does not rely upon the effective operation of one or more Active Exposure Pathway Mitigation Measures pursuant to 310 CMR 40.1025.

7. Soil and Groundwater Categories

Although the site building is currently vacant, due to the foreseeable future use of the site for residential purposes, the Frequency of Use for children is “High” and for adults is also “High”. The majority of the property at 103 Washington Street (Disposal Site) not occupied by the building is currently unpaved (due to the RAM excavation) or covered with asphalt and/or concrete.

Future development plans call for the majority of the property to be occupied by a mixed-use commercial/residential building, which will prevent the potential to disturb soil and averting direct contact with the contaminated soil or inhalation of contaminated soil derived dust, and will not be used for gardening, digging, and/or recreational sports. Therefore, the Intensity of

Use is “Low”. The soil at the site is covered with asphalt pavement and/or the site building, thus preventing accessibility of the soil, therefore the site soil is characterized as “Potentially Accessible”. Based on Table 40.0933(9) “Soil Category Selection Matrix - Human Exposure Potential” the soil is characterized as Category S-2. However, in order to be conservative, soil testing results summarized in Table 2 in **Attachment “B”** are compared to S-1 standards.

Pursuant to 310 CMR 40.0932(4), the groundwater is not categorized as GW-1, as the subject site is **NOT**:

- a. Within a Current Drinking Water Source Area
- b. Within a Potential Drinking Water Source Area

According to 310 CMR 40.0006, a Current Drinking Water Source Area is defined as groundwater located: (a) within the Zone II for a public water supply; (b) within the Interim Wellhead Protection Area for a public water supply; (c) within the Zone A of a Class A surface water body used as a public water supply; or (d) within 500 feet of a private water supply well. A Potential Drinking Water Source Areas is defined as groundwater located: (a) 500 feet or more from a public water supply distribution pipeline; (b) within an area designated by a municipality specifically for the protection of groundwater quality to ensure its availability for use as a source of potable water supply; or (c) within a Potentially Productive Aquifer that has not been excluded as a Non-Potential Drinking Water Source Area, as defined by the MCP.

According to 310 CMR 40.0932(6), “groundwater shall be defined to be in category GW-2 if it is located within 30 feet of an existing occupied building or structure, and the average annual depth to groundwater in that area is 15 feet or less”. Groundwater has been measured at a depth of less than 15 feet at the site, and as such, the groundwater within 30 feet of the existing on-site structure and any future structures on the property is considered GW-2.

Finally, groundwater at the site as categorized as GW-3 pursuant to 310 CMR 40.932(2), which applies to all groundwater in the Commonwealth as it is considered a potential source of discharge to surface water.

8. Comparison of Exposure Point Concentrations

Pursuant to 310 CMR 40.0924(2)(a)(1), Exposure Points for groundwater “shall be the groundwater resource itself, as measured at each wellhead and/or nearest tap of a well screened within the horizontal and vertical distribution of the oil and/or hazardous material in the groundwater. Existing water supply wells and monitoring wells shall be used to represent current or potential groundwater Exposure Points”.

As previously discussed and shown in Table 3 in **Attachment “B”**, groundwater samples obtained from monitoring wells IES-1, IES-2, IES-4, IES-5, and IES-6 at the site were tested for Volatile Petroleum Hydrocarbons (VPH) with target Volatile Organic Compounds (VOCs); Extractable Petroleum Hydrocarbons (EPH) with Polynuclear Aromatic

Hydrocarbons (PAHs); Volatile Organic Compounds (VOCs) via EPA Method 8260; and/or dissolved RCRA 8 Metals. The results of these testing programs did not reveal the presence of any of these compounds above the applicable Reportable Concentrations (RCGW-2) or above the applicable MCP Method 1 GW-2 or GW-3 Standards at any location tested regarding contaminants associated with RTN 3-34310. Therefore, a level of “No Significant Risk” exists for the groundwater at the site, with regard to RTN 3-34310.

It is noted that elevated levels of Tetrachloroethylene (0.2 mg/l) and Trichloroethylene (0.046 mg/l), above the applicable Reportable Concentrations of 0.05 mg/l and 0.005 mg/l, respectively, were previously identified at the site. However, this release has been delineated within the contaminant plume associated with RTN 3-23246 at 50 Tufts Street, and is being addressed via Response Actions conducted under RTN 3-23246. Therefore, a Downgradient Property Status (DPS) submittal is not warranted, and the elevated levels of TCE and PCE in the groundwater are considered a release which does not require reporting pursuant to 310 CMR 40.0317(16), since (a) a response action is being undertaken in compliance with the provisions of 310 CMR 40.0000 to address such release; (b) a release notification was previously provided to the Department for the disposal site on which the release has been observed or documented; and (c) “such presence of oil and/or hazardous material is consistent with the types, nature, exposure potential and quantities of oil and/or hazardous material for which that notification was provided to the Department.

The elevated levels of PCE and TCE in the groundwater at the subject site are not within the boundaries of the Disposal Site associated with RTN 3-34310 and are considered a separate release associated with RTN 3-23246, and as such, are not included as Contaminants of Concern in this Risk Characterization.

With regard to soil, it is noted that petroleum contaminants above the MCP Method 1 S-1 Standards were detected in soil samples collected from test boring IES-4 where C₅-C₈ Aliphatics (1,700 mg/kg), C₉-C₁₀ Aromatics (640 mg/kg), and C₉-C₁₂ Aliphatics (1,900 mg/kg) were detected above the S-1/GW-2 and S-1/GW-3 Standards of 100 mg/kg for C₅-C₈ Aliphatics and C₉-C₁₀ Aromatics and 1,000 mg/kg for C₉-C₁₂ Aliphatics. Naphthalene (5 mg/kg) was also detected above the RCS-1 Standard of 4 mg/kg, but below the S-1/GW-2 Standard of 20 mg/kg and the S-1/GW-3 Standard of 500 mg/kg.

However, the release at IES-4, which originated from the dispenser island in the area of boring IES-4 on the southern portion of the site, has been addressed as a “Release Abatement Measure” (RAM) pursuant to 310 CMR 40.0440. Following the excavation and removal of a total of 379.72 tons of gasoline- contaminated soil as part of the RAM, confirmatory testing of soil samples collected from the sidewalls and base of the excavation did not reveal the presence of any COC’s (VPH compounds and target VOC’s) above laboratory quantitation limits or MCP Method 1 S-1 Standards in any of the sample tested. Therefore, a condition of “No Significant Risk” exists for the soil at the site; and as previously discussed, a reportable release to the groundwater was not identified and as such a condition of “No Significant Risk” exists for the groundwater at the Disposal Site associated with RTN 3-34310.

9. Feasibility Analysis

Due to the low levels of gasoline contamination remaining in soil and/or groundwater following the RAM excavation activities, a feasibility evaluation conducted pursuant to 310 CMR 40.0860, which has concluded that “the achievement of Background is not feasible”.

With regard to soil, it is noted that following the excavation and removal of 379.72 tons of gasoline contaminated soil as part of a RAM, no contaminants associated with RTN 3-34310 (i.e. gasoline constituents) were not detected above the applicable MCP Method 1 S-1/GW-2 and S-1/GW-3 Standards in any of the confirmatory sidewall or bottom samples tested. It is noted that VPH compounds were previously detected above RCS-1 Standards in soil samples collected from boring IES-4, however, the contaminated soil in this area has been removed as part of the RAM.

With regard to groundwater testing, Contaminants of Concern (COC's) associated with RTN 3-34310 included C₅-C₈ Aliphatics (0.92 mg/l), C₉-C₁₀ Aromatics (0.84 mg/l), C₉-C₁₂ Aliphatics (1.3 mg/l), Benzene (0.012 mg/l), Ethylbenzene (0.063 mg/l), Xylenes (0.0588 mg/l), Naphthalene (0.069 mg/l), and Toluene (0.0043 mg/l) detected in 1 of 5 monitoring wells tested (IES-4); and Methyl-tert-butyl-ether (up to 0.0098 mg/l) detected in 2 of 5 wells tested (IES-5 and IES-6). However, as shown in Table 3 in **Attachment “B”**, all COC's detected are well below the applicable GW-2 and GW-3 standards for each of the contaminants detected.

As previously noted, elevated levels of Tetrachloroethylene (0.2 mg/l) and Trichloroethylene (0.046 mg/l), above the applicable Reportable Concentrations of 0.05 mg/l and 0.005 mg/l, respectively, were previously identified in groundwater at the site. However, this release has been delineated within the contaminant plume associated with RTN 3-23246 at 50 Tufts Street, and is being addressed via Response Actions conducted under RTN 3-23246. As such, TCE and PCE are not considered Contaminants of Concern regarding the gasoline release associated with RTN 3-34310.

While a Permanent Solution is appropriate for this site, background levels have not been reached. In such cases, 310 CMR 40.0860 requires a determination regarding the feasibility of going beyond No Significant Risk to achieve or approach background. DEP has released a Final Policy entitled “Conducting Feasibility Evaluations under the MCP,” #WSC-04-160 (July 16, 2004), which specifically addresses this subject. DEP's Final Policy provides guidance to LSPs in conducting the required Feasibility Assessment by presuming that all sites fall into one of three categories:

1. Sites where conditions exist that are stipulated to be “categorically feasible” to achieve or approach background;
2. Sites where conditions exist that are stipulated to be “categorically infeasible” to achieve or approach background; and
3. All other circumstances. For conditions (1) and (2), a site-specific feasibility evaluation is considered unnecessary.

In these cases, DEP has already stipulated that given site conditions, achieving or approaching background is either “feasible” or “infeasible.” For all other circumstances, a site-specific feasibility analysis must be completed.

To determine if it is “feasible” to achieve or approach background conditions, 310 CMR 40.1020 requires that an analysis be conducted to determine (among others) whether the benefits of the remedial actions to achieve or approach background justify the costs associated with those actions. The Final Policy contains guidance as to when the additional costs to attempt to reach background exceed the benefits. In general, if incremental (additional) costs to reach background conditions are less than 20 percent of expenditures to reach No Significant Risk, there is a presumption that achieving or approaching background is considered feasible. The conditions of categorical infeasibility include: 1) Excavation under permanent structures; 2) Remediation that will substantially affect public service or affect public safety; 3) Remediation of Degradable (Non-persistent) Contaminants; and 4) Remediation of Persistent Compounds in S-2 and S-3 soils.

The site does not meet the criteria for categorical infeasibility. There are residual concentrations of VPH compounds and gasoline-related VOC’s in groundwater. However, it is noted that no VPH compounds or target Analytes were detected above or even approaching the GW-2 or GW-3 Standards at the site under existing conditions or in the foreseeable future.

Remediation of the VPH compounds and gasoline-related VOC’s in groundwater at the site would likely ultimately prove to be ineffective, and costly. Therefore, it is not considered feasible to remediate soil and/or groundwater to background at the site, as costs would far exceed 20% of the costs of achieving NSR. As a result, it is concluded that pursuant to 310 CMR 40.0860(7)(a), the incremental cost of conducting the Comprehensive Remedial Alternative or other response action” necessary to reduce contaminant levels to background “is substantial and disproportionate to the incremental benefit of risk reduction, environmental restoration, and monetary and non-pecuniary values”.

10. Characterization of Risk to Safety

The risk of harm to safety was characterized based on the data collected pursuant to the response actions being performed at the site, receptor, and exposure information, as identified in 310 CMR 40.0904 through 40.0933. Pursuant to 310 CMR 40.0960(3), a level of “no significant risk to safety” exists at the site due to the absence of (a) rusted or corroded drums or containers, open pits, lagoons, or other dangerous structures; (b) any threat of fire or explosion, including the presence of explosive vapors resulting from a release of oil and/or hazardous material; and (c) any uncontained materials which exhibit the characteristics of corrosivity, reactivity, or flammability described in 310 CMR 40.0347.

11. Uncertainty Analysis

The procedures used to assess potential human health risks in this and similar evaluations are subject to a wide variety of uncertainties. In general, the main sources of uncertainty in the Risk Assessment of a reasonably well characterized site includes:

- Environmental chemistry sampling and analysis.
- Environmental parameter measurements.
- Fate and transport modeling.
- Toxicological data and dose-response extrapolations.
- Errors through combinations of the above.

Environmental chemistry sampling and analysis error can stem from the error inherent in the procedures, from a failure to take an adequate number of samples to arrive at sufficient areal resolution; from mistakes on the part of the sampler; or from the heterogeneity of the matrix being sampled. Some sampling and analytical error is almost certainly present, but likely has a limited impact on the results of this risk assessment.

Exposure estimation is another potential source of error in this risk assessment. The use of MCP Method 1 Standards assumes extremely conservative exposures, and exposure estimates in many cases are highly dependent on the prediction of intake values, exposure frequency, exposure duration, and other exposure assumptions used in this assessment. For this site, the largest source of uncertainty is associated with the assumption that the potential for human exposure to contaminated soil, sediment, and groundwater exists.

The results of animal studies were used to predict the potential health effects of a chemical in humans. Extrapolation of toxicological data from animal tests is probably one of the largest sources of uncertainty in any risk assessment. There may be important, but unidentified differences in uptake, metabolism, and distribution in the body between the test species and humans. Typically, the animals are administered high doses of a chemical in a standard diet, while humans are generally exposed to much lower doses in a highly variable diet. Humans have a 70-75 year life expectancy, and may be exposed either intermittently or regularly for an exposure period ranging from months to a full lifetime. Because of these differences, it is not surprising that extrapolation error is a large source of uncertainty in a risk assessment. Even if human studies were available, uncertainties can be large because of diet, activity patterns, exposure duration, and frequency, as well as individual susceptibility.

12. Imminent Hazard Evaluation

This section of this submittal is included in order to support an Imminent Hazard Evaluation for the release at the above referenced site as required by 310 CMR 40.0953. The subject site is currently occupied by a vacant garage with plans calling for its demolition and the site's redevelopment for commercial/residential usage.

The site is located in a mixed residential and commercial section of Somerville, and in addition to abutting residential properties, the "Capuano Early Childhood Center" is located

approximately 225 feet to the north of the site at 150 Glen Street. The release addressed by this Imminent Hazard Evaluation was reported by the DEP as a “120-day” notification condition on May 30, 2017 (RTN 3-34310). Contamination at the site originated from the incidental spillage and leaking pipes associated with the pump island utilized as part of the site’s historic use as a gasoline filling station, which operated at the site from the early 1930’s through 1987. It should be noted that a reportable release of gasoline to the groundwater was not identified at this Disposal Site (i.e. RTN 3-34310).

Previous reports associated with the subject site containing information relevant to RTN 3-34310 at the site included a “Phase 1 Environmental Site Assessment” report, dated March 24, 2017 by IES, Inc.; a “Subsurface Investigation” report, dated April 24, 2017, by IES; a “Release Abatement Measure (RAM) Plan Submittal”, dated June 5, 2017 by IES, Inc.; a “Release Abatement Measure (RAM) Status Report #1”, dated October 3, 2017 by IES; and a “Release Abatement Measure (RAM) Completion Statement” report, dated December **, 2017.

Also reviewed was a “Limited Subsurface Investigation” for the northerly abutting property at 99 Franklin Street), dated July 17, 2013, by Harvey Associates of Hingham, MA, which documents that the release associated with RTN 3-34310 has not affected this abutting property.

It is noted that elevated levels of Tetrachloroethylene (0.2 mg/l) and Trichloroethylene (0.046 mg/l), above the applicable Reportable Concentrations of 0.05 mg/l and 0.005 mg/l, respectively, were previously identified at the site. However, this release has been delineated within the contaminant plume associated with RTN 3-23246 at 50 Tufts Street, and is being addressed via Response Actions conducted under RTN 3-23246, which consists of different contaminants originating from a separate, off-site source). Therefore, the TCE and PCE detected in the groundwater at the site are not considered Contaminants of Concern (COC’s) for this MCP Method 1 Risk Characterization, which addresses the gasoline contamination associated with RTN 3-34310.

As previously discussed, the Disposal Site associated with RTN 3-34310 consists of the southern and southeastern portions of the 0.13-acre property at 103 Washington Street, which is currently covered with unpaved backfill material following RAM excavation activities. However, a reportable release of gasoline to groundwater was not encountered at the site, and confirmatory soil samples collected from the sidewalls and base of the RAM excavation did not reveal the presence of any COC’s above the applicable MCP Method 1 S-1/GW-2 or S-1/GW-3 standards.

The following information is provided to address the requirements of 310 CMR 40.0953:

- A reportable release of gasoline to the groundwater associated with RTN 3-34310 has not been identified, and a separate release of CVOC’s associated with RTN 3-23246 from an off-site source (50 Tufts Street) is being addressed by others.

- The groundwater at the site is not used for drinking purposes, and therefore, no drinking water exposures exist.
- Headspace screening and laboratory testing of soil samples collected from six test borings advanced at the site and from twelve post-RAM confirmatory samples; and laboratory analysis of groundwater samples obtained from five monitoring wells installed at the site indicated that no “Hot Spots” are present.
- Laboratory testing of groundwater samples obtained from monitoring wells at the site did not reveal the presence of any elevated levels of any contaminants of concern (i.e. gasoline-related VPH compounds and target VOC’s), above the applicable MCP Method 1 GW-2 and GW-3 Standards. In addition, no separate-phase product has been detected at the site during any round of groundwater sampling. Therefore, a Condition of Substantial Release Migration is not present at the site at this time.
- Further, due to the absence of any surface water identified at the Disposal Site or at any location within 0.5 miles of the site, the absence of any contamination at the site exceeding Method 1 GW-3 standards, the presence of any “break-out” at any location on the site, or at any nearby body of surface water is not expected from this release.

Therefore, it is the opinion of Daniel G. Jaffe (LSP #2347) that an Imminent Hazard is not present at the subject site at this time. This is based on the preponderance of the evidence that the release conditions specified in 310 CMR 40.0321(2) and/or 40.0321(3) do not constitute an actual Imminent Hazard to human health in conformance with the Imminent Hazard Evaluation process described in 310 CMR 40.0953, and in consideration of the site-specific factors and risk assessment and risk management criteria contained in 310 CMR 40.0950.

13. Identification of Human Receptors

Human receptors based on current and foreseeable future usage of the site include workers and visitors to the existing and proposed future residents at the site (children and adults, and children ages one to eight), visitors to nearby residential properties, trespassers (children and adults), women of childbearing age, and construction workers. This identification of human receptors is based on both the current and potentially foreseeable site use consistent of commercial use of the subject site, and the potentially foreseeable site uses consist of residential usage of the subject site.

14. Identification of Environmental Receptors

Based on the MADEP Bureau of Waste Site Cleanup GIS map, there are no wetlands, areas of Critical Environmental Concern, surface water, or fresh and saltwater fisheries and fish habitat identified within the vicinity (i.e. 500 feet of the subject site.) However, pursuant to 310 CMR 40.0922, documentation of this Risk Characterization shall identify and describe the Environmental Receptors which are likely to be present at the disposal site or in the

surrounding environment and which, as a result, would likely be exposed to oil and/or hazardous material.

Examples of such biota may include, but are not limited to:

- (a) wildlife, such as deer, squirrel and fox;
- (b) fish and shellfish; and
- (c) plants, such as grasses and trees.

A MassGIS Map identifying environmental receptors in the vicinity of the site is included as Figure 3 in **Attachment “A”** of this submittal.

15. Evaluation of Risk of Harm to Safety

Due to the low levels of contamination remaining, the release at the site does not pose a risk of injury or bodily harm to people. In addition, there are no rusted or corroded drums or containers; weakened berms; threats of fire or explosion or explosive vapors; unsecured pits ponds, lagoons, or other dangerous structures; or exposed and uncontained materials that exhibit the characteristics of corrosivity, reactivity, flammability, or contain infectious materials as described in 310 CMR 40.0347.

16. Evaluation of Risk of Harm to the Environment

The risk of harm to site biota and habitats is characterized by evaluating ecological parameters using a two-stage approach. In Stage I, the objective is to identify and document conditions that do not warrant a Stage II Risk Characterization, either because of the absence of a potentially significant exposure pathway, or because environmental harm is readily apparent and therefore, additional assessment would be redundant.

The Stage I evaluation based on the available evidence indicates that there is no current or potential future exposure of Environmental Receptors to contamination at or from the disposal site. This conclusion is based on the fact that there is no current or past visible physical evidence that oil and/or hazardous material from the site has come to be located in surface soil, surface water, sediment or wetlands. In addition, there are no records or other evidence of current or past impacts of oil and/or hazardous materials from the site on wildlife, fish, or other aquatic biota. There is also no visible evidence or analytical data indicating the presence of oil and/or hazardous material from the site in surface water or sediment (including wetlands). Based on the absence of significant groundwater contamination (i.e. a reportable release to groundwater was not encountered for RTN 3-34310) and the negligible migration noted at the site, it does not appear that contamination has, or will, migrate a sufficient distance to impact surface water or sediments (including wetlands).

In summary, based on the absence of current or potential future exposure, a condition of “no significant risk of harm” to the site biota has been achieved, and a Stage II Environmental Risk Characterization is not required.

17. Evaluation of Risk of Harm to Public Health and Welfare

Residual chemicals at the site do not present nuisance conditions (i.e. unpleasant odors), and are unlikely to significantly impact property values. The contamination is also contained within the property boundaries. Based on the EPC's of all Contaminants of Concern in the soil and groundwater at levels below MCP Method 1 Standards, a condition of "No Significant Risk to Health and Public Welfare" has been achieved at the site.

18. Risk Characterization Conclusion

A Method 1 Risk Characterization was utilized at the site as part of this Permanent Solution Statement with Conditions, as there is a promulgated MCP Method 1 Standard for each oil and hazardous material of concern at the subject site, and the contamination is limited to the soil, since a reportable release to the groundwater was not identified.

A subsurface investigation and a soil excavation and removal program conducted as a RAM have been performed at the property at 103 Washington Street in Somerville from April through October 2017. The southern and southeastern portions of the 0.13-acre property at 103 Washington Street are included in the "Disposal Site" identified as RTN 3-34310. The MassDEP was notified of a "120-Day" reporting condition at the above referenced site on May 30, 2017, due to the presence of elevated concentrations C₅-C₈ Aliphatic Hydrocarbons (1,700 mg/kg), C₉-C₁₀ Aromatic Hydrocarbons (640 mg/kg), C₉-C₁₂ Aliphatic Hydrocarbons (1,900 mg/kg), and Naphthalene (5 mg/kg) in the soil above the applicable Reportable Concentrations (RCS-1) of 100 mg/kg for C₅-C₈ Aliphatics and C₉-C₁₀ Aromatics; 1,000 mg/kg for C₉-C₁₂ Aliphatics; and 4 mg/kg for Naphthalene.

Laboratory testing of groundwater samples collected from five monitoring wells installed at the 0.13-acre site did not identify a reportable release to the groundwater associated with RTN 3-34310.

Using a CSM approach, based on the extent of the soil contamination observed during the initial subsurface investigation conducted in April of 2017 and the subsequent RAM excavation activities conducted in September and October of 2017, it is theorized that the source of the gasoline contamination in the soil at the site associated with RTN 3-34310 is attributed to incidental spillage and or piping leaks at the dispenser pump island associated with the former gasoline station at the site, which operated from the 1930's through 1987.

Specifically, based on PID readings and the gasoline odor noted in the soil, and further supported by laboratory testing of soil samples, it appears that the gasoline release at the site originated at former pump island, where it was discovered at about 2-4 feet below ground surface (bgs) in the general vicinity of the pump island and associated UST piping. From there it "coned out", extending to greater depths further away from this suspect source. The depth of contamination was greatest (approximately 12.5 feet bgs) near the corner of Washington Street and Franklin (IES-4) and became shallower towards the north.

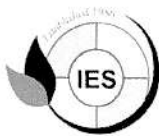
The absence of any indication of a reportable release in the soil and/or groundwater at test borings/monitoring wells IES-1 and IES-2 and at the northerly abutting property at 99 Franklin Street indicated that the former gasoline UST's at the site were not the source of the release.

Based on the contents of this report, the interpretation of the data above, and the interpretation of the remainder of the information detailed in this report, the levels of contamination in the soil and groundwater at the site are present below the applicable MCP Method 1 Standards (S-1 for soil and GW-2 and GW-3 for groundwater). Therefore, in accordance with 310 CMR 40.0973(7), a condition of "No Significant Risk" of harm to health, public welfare, and the environment has been achieved for the soil and groundwater, and as such, a Permanent Solution Statement with No Conditions is applicable for the subject site.

In summary, the documentation of this Risk Characterization has affirmed and documented the applicability of Method 1 to the disposal site pursuant to 310 CMR 40.0971(4),

ATTACHMENT “G”

**BWSC Forms (submitted via eDEP)
eDEP Authorization Letter
Public Involvement Letters**



ENVIRONMENTAL
CONSULTANTS

50 Salem Street, Building A, Suite 108
Lynnfield, MA 01940
617-623-8880 • Fax: 781-224-9713
www.iesinc.com

Direct Dial Numbers

David Borans:	(617) 776-8549
Daniel Jaffe:	(617) 776-2715
617-623-8880	
Kerry Asetta:	x-206
John Beck:	x-205
Christopher Buchanan:	x-203
Ligia Rivera:	x-207
Steven Iorio:	x-208
Kevin Taylor:	x-210
James Sullivan:	x-204
Melissa Alvarado:	x-212

May 12, 2017

Mr. Peter Koskores
KRE Company, LLC
22 McGrath Highway
Somerville, MA 02143

Re: eDEP Agent for Authorization
103 Washington Street
Somerville, MA

Dear Mr. Koskores:

The signing of this letter by you, as the Authorized Agent of KRE Company, LLC, the Owner and/or Operator of the above mentioned property and the "Potentially Responsible Party" (PRP) for the release(s) at the above mentioned property, authorizes Daniel G. Jaffe as a Licensed Site Professional (LSP) on behalf of IES, Inc. to submit the MADEP submittals via eDEP regarding the release at the above mentioned site.

Respectfully,

Daniel G. Jaffe (LSP #2347)
President

Accepted by:

KRE Company, LLC

By:

Date: 5/23/17

Mr. Peter Koskores



50 Salem Street, Building A, Suite 108
Lynnfield, MA 01940
617-623-8880 • Fax: 781-224-9713
www.iesinc.com

Direct Dial Numbers
David Borans: (617) 776-8549
Daniel Jaffe: (617) 776-2715
617-623-8880
Kerry Asetta: x-206
John Beck: x-205
Christopher Buchanan: x-203
Ligia Rivera: x-207
Steven Iorio: x-208
Kevin Taylor: x-210
Melissa Alvarado: x-212

December 8, 2017

Brian Green, M.D., Director
Somerville Health Department
Somerville City Hall Annex
50 Evergreen Avenue
Somerville, MA 02145

Re: Permanent Solution Statement
103 Washington Street
Somerville, MA
RTN 3-34310

Dear Dr. Green:

In accordance with provisions of the Massachusetts Contingency Plan (310 CMR 40.1403), a "Permanent Solution Statement" has been filed for the above referenced site. An electronic copy of the Statement may be obtained from the DEP's site list website (<http://public.dep.state.ma.us/SearchableSites2/Search.aspx>) under Release Tracking Number 3-34310.

Additional information regarding the Permanent Solution Statement associated with this Disposal Site can be obtained from the DEP's Northeast Regional Office at 205B Lowell Street, Wilmington, MA, 01887; or directly from IES, Inc. at 50 Salem Street, Building A, Suite 108, Lynnfield, MA 01940.

If you or any member of your staff should have any questions regarding this matter, please do not hesitate to contact this office.

Respectfully Submitted,
IES, Inc.

Daniel G. Jaffe, LSP #2347
President



50 Salem Street, Building A, Suite 108
Lynnfield, MA 01940
617-623-8880 • Fax: 781-224-9713
www.iesinc.com

Direct Dial Numbers
David Borans: (617) 776-8549
Daniel Jaffe: (617) 776-2715
617-623-8880
Kerry Asetta: x-206
John Beck: x-205
Christopher Buchanan: x-203
Ligia Rivera: x-207
Steven Iorio: x-208
Kevin Taylor: x-210
Melissa Alvarado: x-212

December 8, 2017

Mayor Joseph A. Curtatone
Somerville City Hall
93 Highland Ave.
Somerville, MA 02143

Re: Permanent Solution Statement
103 Washington Street
Somerville, MA
RTN 3-34310

Dear Mayor Curtatone:

In accordance with provisions of the Massachusetts Contingency Plan (310 CMR 40.1403), a "Permanent Solution Statement" has been filed for the above referenced site. An electronic copy of the Statement may be obtained from the DEP's site list website (<http://public.dep.state.ma.us/SearchableSites2/Search.aspx>) under Release Tracking Number 3-34310.

Additional information regarding the Permanent Solution Statement associated with this Disposal Site can be obtained from the DEP's Northeast Regional Office at 205B Lowell Street, Wilmington, MA, 01887; or directly from IES, Inc. at 50 Salem Street, Building A, Suite 108, Lynnfield, MA 01940.

If you or any member of your staff should have any questions regarding this matter, please do not hesitate to contact this office.

Respectfully Submitted,
IES, Inc.

Daniel G. Jaffe, LSP #2347
President

Appendix D GEI Laboratory Data



ANALYTICAL REPORT

Lab Number:	L2507890
Client:	GEI Consultants 400 Unicorn Park Drive Woburn, MA 01801
ATTN:	Chris Coner
Phone:	(781) 721-4000
Project Name:	TUFTS STREET
Project Number:	045163
Report Date:	02/26/25

The original project report/data package is held by Pace Analytical Services. This report/data package is paginated and should be reproduced only in its entirety. Pace Analytical Services holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: NH ELAP (2249).

120 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.pacelabs.com



Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2507890
Report Date: 02/26/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2507890-01	045163-103WASH-F1	AIR	SOMERVILLE, MA	02/11/25 10:42	02/12/25
L2507890-02	045163-103WASH-B1	AIR	SOMERVILLE, MA	02/11/25 11:09	02/12/25
L2507890-03	045163-103WASH-F2	AIR	SOMERVILLE, MA	02/11/25 11:30	02/12/25
L2507890-04	045163-103WASH-UNIT1	AIR	SOMERVILLE, MA	02/11/25 11:25	02/12/25
L2507890-05	045163-103WASH-SV1	SOIL_VAPOR	SOMERVILLE, MA	02/11/25 13:07	02/12/25
L2507890-06	045163-103WASH-SV2	SOIL_VAPOR	SOMERVILLE, MA	02/11/25 13:05	02/12/25

Project Name: TUFTS STREET

Lab Number: L2507890

Project Number: 045163

Report Date: 02/26/25

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	NO
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES
A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO
For any questions answered "No", please refer to the case narrative section on the following page(s).		

Please note that sample matrix information is located in the Sample Results section of this report.



Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2507890
Report Date: 02/26/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Pace Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Pace's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Pace Project Manager and made arrangements for Pace to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2507890
Report Date: 02/26/25

Case Narrative (continued)

MCP Related Narratives

Canisters were released from the laboratory on February 6, 2025. The canister certification data is provided as an addendum.

MCP Volatile Organics in Air

In reference to questions E b/I:

All samples were analyzed for a subset of the MCP compounds per the Chain of Custody.

Sample Receipt

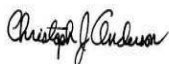
L2507890-01; the analysis of the sample was cancelled by the client.

L2507890-02: The sample had an RPD for the pre- and post-flow controller calibration check (24% RPD) that was outside of the control limit (20% RPD). The final pressure recorded by the laboratory of the associated canister was -5.5 inches of mercury. No further action was required.

L2507890-06: The sample had an RPD for the pre- and post-flow controller calibration check (31% RPD) that was outside of the control limit (20% RPD). The final pressure recorded by the laboratory of the associated canister was -0.0 inches of mercury. No further action was required.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Christopher J. Anderson

Title: Technical Director/Representative

Date: 02/26/25

QC OUTLIER SUMMARY REPORT

Project Name: TUFTS STREET**Lab Number:** L2507890**Project Number:** 045163**Report Date:** 02/26/25

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
--------	-----------------------	--------	-----------	---------	------------------	---------------	--------------------	-------------------------

There are no QC Outliers associated with this report.

AIR

Project Name: TUFTS STREET**Project Number:** 045163**Lab Number:** L2507890**Report Date:** 02/26/25**SAMPLE RESULTS**

Lab ID: L2507890-02
 Client ID: 045163-103WASH-B1
 Sample Location: SOMERVILLE, MA

Date Collected: 02/11/25 11:09
 Date Received: 02/12/25
 Field Prep: Not Specified

Sample Depth:
 Matrix: Air
 Analytical Method: 101,TO-15-SIM
 Analytical Date: 02/24/25 19:28
 Analyst: TPH

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
MCP Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Tetrachloroethene	0.080	0.020	--	0.542	0.136	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	84		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	89		60-140



Project Name: TUFTS STREET**Project Number:** 045163**Lab Number:** L2507890**Report Date:** 02/26/25**SAMPLE RESULTS**

Lab ID: L2507890-03
 Client ID: 045163-103WASH-F2
 Sample Location: SOMERVILLE, MA

Date Collected: 02/11/25 11:30
 Date Received: 02/12/25
 Field Prep: Not Specified

Sample Depth:
 Matrix: Air
 Analytical Method: 101,TO-15-SIM
 Analytical Date: 02/24/25 20:08
 Analyst: TPH

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
MCP Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Tetrachloroethene	0.046	0.020	--	0.312	0.136	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	81		60-140
bromochloromethane	85		60-140
chlorobenzene-d5	88		60-140



Project Name: TUFTS STREET**Project Number:** 045163**Lab Number:** L2507890**Report Date:** 02/26/25**SAMPLE RESULTS**

Lab ID: L2507890-04
 Client ID: 045163-103WASH-UNIT1
 Sample Location: SOMERVILLE, MA

Date Collected: 02/11/25 11:25
 Date Received: 02/12/25
 Field Prep: Not Specified

Sample Depth:
 Matrix: Air
 Analytical Method: 101,TO-15-SIM
 Analytical Date: 02/24/25 20:48
 Analyst: TPH

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
MCP Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Tetrachloroethene	0.025	0.020	--	0.170	0.136	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	84		60-140
bromochloromethane	85		60-140
chlorobenzene-d5	91		60-140



Project Name: TUFTS STREET**Project Number:** 045163**Lab Number:** L2507890**Report Date:** 02/26/25**SAMPLE RESULTS**

Lab ID: L2507890-05
 Client ID: 045163-103WASH-SV1
 Sample Location: SOMERVILLE, MA

Date Collected: 02/11/25 13:07
 Date Received: 02/12/25
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil_Vapor
 Analytical Method: 101,TO-15-SIM
 Analytical Date: 02/26/25 05:38
 Analyst: TPH

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
MCP Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	0.049	0.020	--	0.194	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	0.036	0.020	--	0.193	0.107	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Tetrachloroethene	0.201	0.020	--	1.36	0.136	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	86		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	91		60-140



Project Name: TUFTS STREET**Project Number:** 045163**Lab Number:** L2507890**Report Date:** 02/26/25**SAMPLE RESULTS**

Lab ID: L2507890-06
 Client ID: 045163-103WASH-SV2
 Sample Location: SOMERVILLE, MA

Date Collected: 02/11/25 13:05
 Date Received: 02/12/25
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil_Vapor
 Analytical Method: 101,TO-15-SIM
 Analytical Date: 02/26/25 06:15
 Analyst: TPH

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
MCP Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	0.489	0.020	--	1.94	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	3.50	0.020	--	13.9	0.079	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	4.98	0.020	--	26.8	0.107	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Tetrachloroethene	4.98	0.020	--	33.8	0.136	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	88		60-140
bromochloromethane	93		60-140
chlorobenzene-d5	94		60-140



Project Name: TUFTS STREET

Lab Number: L2507890

Project Number: 045163

Report Date: 02/26/25

Method Blank Analysis Batch Quality Control

Analytical Method: 101,TO-15-SIM

Analytical Date: 02/24/25 13:55

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
MCP Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 02-04 Batch: WG2033510-4								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1



Project Name: TUFTS STREET

Lab Number: L2507890

Project Number: 045163

Report Date: 02/26/25

Method Blank Analysis Batch Quality Control

Analytical Method: 101,TO-15-SIM

Analytical Date: 02/25/25 16:13

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
MCP Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 05-06 Batch: WG2034026-4								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1



Lab Control Sample Analysis **Batch Quality Control**

Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2507890
Report Date: 02/26/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 02-04 Batch: WG2033510-3								
Vinyl chloride	130		-		70-130	-		
1,1-Dichloroethene	96		-		70-130	-		
trans-1,2-Dichloroethene	104		-		70-130	-		
1,1-Dichloroethane	96		-		70-130	-		
cis-1,2-Dichloroethene	94		-		70-130	-		
1,1,1-Trichloroethane	100		-		70-130	-		
Trichloroethene	96		-		70-130	-		
1,1,2-Trichloroethane	89		-		70-130	-		
Tetrachloroethene	101		-		70-130	-		
1,1,2,2-Tetrachloroethane	102		-		70-130	-		

Lab Control Sample Analysis **Batch Quality Control**

Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2507890
Report Date: 02/26/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 05-06 Batch: WG2034026-3								
Vinyl chloride	105		-		70-130	-		
1,1-Dichloroethene	127		-		70-130	-		
trans-1,2-Dichloroethene	120		-		70-130	-		
1,1-Dichloroethane	123		-		70-130	-		
cis-1,2-Dichloroethene	122		-		70-130	-		
1,1,1-Trichloroethane	115		-		70-130	-		
Trichloroethene	114		-		70-130	-		
1,1,2-Trichloroethane	114		-		70-130	-		
Tetrachloroethene	108		-		70-130	-		
1,1,2,2-Tetrachloroethane	124		-		70-130	-		

Project Name: TUFTS STREET

Project Number: 045163

Serial_No:02262516:31
Lab Number: L2507890

Report Date: 02/26/25

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt	Flow Controller Leak Chk	Flow Out mL/min	Flow In	% RPD
L2507890-01	045163-103WASH-F1	02148	Flow 5	02/06/25	504387		-	-	-	Pass	3.0	7.7	88
L2507890-01	045163-103WASH-F1	5405	6.0L Can	02/06/25	504387	L2505816-07	Pass	-30.2	1.9	-	-	-	-
L2507890-02	045163-103WASH-B1	01423	Flow 5	02/06/25	504387		-	-	-	Pass	3.0	3.8	24
L2507890-02	045163-103WASH-B1	5407	6.0L Can	02/06/25	504387	L2505816-07	Pass	-30.0	-5.5	-	-	-	-
L2507890-03	045163-103WASH-F2	0842	Flow 5	02/06/25	504387		-	-	-	Pass	3.0	3.4	13
L2507890-03	045163-103WASH-F2	2818	6.0L Can	02/06/25	504387	L2505816-07	Pass	-30.2	-8.8	-	-	-	-
L2507890-04	045163-103WASH-UNIT1	02794	Flow 5	02/06/25	504387		-	-	-	Pass	3.0	3.4	13
L2507890-04	045163-103WASH-UNIT1	1553	6.0L Can	02/06/25	504387	L2505816-08	Pass	-30.2	-8.2	-	-	-	-
L2507890-05	045163-103WASH-SV1	01032	Flow 1	02/06/25	504387		-	-	-	Pass	36.0	42.1	16
L2507890-05	045163-103WASH-SV1	4364	2.7L Can	02/06/25	504387	L2505095-02	Pass	-30.2	0.0	-	-	-	-
L2507890-06	045163-103WASH-SV2	01584	Flow 1	02/06/25	504387		-	-	-	Pass	36.0	49.0	31
L2507890-06	045163-103WASH-SV2	2794	2.7L Can	02/06/25	504387	L2505616-02	Pass	-30.2	0.0	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505095
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505095-02
Client ID: CAN 528 SHELF 74
Sample Location:

Date Collected: 01/29/25 18:00
Date Received: 01/30/25
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15
Analytical Date: 01/30/25 20:03
Analyst: JFI

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	1.00	--	ND	2.46	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505095
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505095-02
Client ID: CAN 528 SHELF 74
Sample Location:

Date Collected: 01/29/25 18:00
Date Received: 01/30/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
Xylenes, total	ND	0.600	--	ND	0.869	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,2-Dichloroethene (total)	ND	1.00	--	ND	1.00	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505095
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505095-02
Client ID: CAN 528 SHELF 74
Sample Location:

Date Collected: 01/29/25 18:00
Date Received: 01/30/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505095
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505095-02
Client ID: CAN 528 SHELF 74
Sample Location:

Date Collected: 01/29/25 18:00
Date Received: 01/30/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	0.996	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1



Project Name: BATCH CANISTER CERTIFICATION**Lab Number:** L2505095**Project Number:** CANISTER QC BAT**Report Date:** 02/26/25**Air Canister Certification Results**

Lab ID: L2505095-02

Date Collected: 01/29/25 18:00

Client ID: CAN 528 SHELF 74

Date Received: 01/30/25

Sample Location:

Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								

Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds				
No Tentatively Identified Compounds				

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	104		60-140
Bromochloromethane	106		60-140
chlorobenzene-d5	103		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505095
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505095-02
Client ID: CAN 528 SHELF 74
Sample Location:

Date Collected: 01/29/25 18:00
Date Received: 01/30/25
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15-SIM
Analytical Date: 01/30/25 20:03
Analyst: JFI

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acrolein	ND	0.050	--	ND	0.115	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505095
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505095-02
Client ID: CAN 528 SHELF 74
Sample Location:

Date Collected: 01/29/25 18:00
Date Received: 01/30/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.100	--	ND	0.377	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.100	--	ND	0.518	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1



Project Name: BATCH CANISTER CERTIFICATION**Lab Number:** L2505095**Project Number:** CANISTER QC BAT**Report Date:** 02/26/25**Air Canister Certification Results**

Lab ID: L2505095-02

Date Collected: 01/29/25 18:00

Client ID: CAN 528 SHELF 74

Date Received: 01/30/25

Sample Location:

Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	114		60-140
bromochloromethane	115		60-140
chlorobenzene-d5	107		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505616
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505616-02
Client ID: CAN 3184 SHELF 16
Sample Location:

Date Collected: 02/01/25 07:00
Date Received: 02/01/25
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15
Analytical Date: 02/02/25 19:25
Analyst: JFI

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	1.00	--	ND	2.46	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505616
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505616-02
Client ID: CAN 3184 SHELF 16
Sample Location:

Date Collected: 02/01/25 07:00
Date Received: 02/01/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
Xylenes, total	ND	0.600	--	ND	0.869	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,2-Dichloroethene (total)	ND	1.00	--	ND	1.00	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505616
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505616-02
Client ID: CAN 3184 SHELF 16
Sample Location:

Date Collected: 02/01/25 07:00
Date Received: 02/01/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505616
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505616-02
Client ID: CAN 3184 SHELF 16
Sample Location:

Date Collected: 02/01/25 07:00
Date Received: 02/01/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	0.996	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1



Project Name: BATCH CANISTER CERTIFICATION**Lab Number:** L2505616**Project Number:** CANISTER QC BAT**Report Date:** 02/26/25**Air Canister Certification Results**

Lab ID: L2505616-02

Date Collected: 02/01/25 07:00

Client ID: CAN 3184 SHELF 16

Date Received: 02/01/25

Sample Location:

Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								

Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds				
No Tentatively Identified Compounds				

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	105		60-140
Bromochloromethane	109		60-140
chlorobenzene-d5	108		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505616
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505616-02
Client ID: CAN 3184 SHELF 16
Sample Location:

Date Collected: 02/01/25 07:00
Date Received: 02/01/25
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15-SIM
Analytical Date: 02/02/25 19:25
Analyst: JFI

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acrolein	ND	0.050	--	ND	0.115	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505616
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505616-02
Client ID: CAN 3184 SHELF 16
Sample Location:

Date Collected: 02/01/25 07:00
Date Received: 02/01/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.100	--	ND	0.377	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.100	--	ND	0.518	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1



Project Name: BATCH CANISTER CERTIFICATION**Lab Number:** L2505616**Project Number:** CANISTER QC BAT**Report Date:** 02/26/25**Air Canister Certification Results**

Lab ID: L2505616-02

Date Collected: 02/01/25 07:00

Client ID: CAN 3184 SHELF 16

Date Received: 02/01/25

Sample Location:

Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	109		60-140
bromochloromethane	114		60-140
chlorobenzene-d5	111		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505816
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505816-07
Client ID: CAN 4258 SHELF 54
Sample Location:

Date Collected: 02/03/25 18:00
Date Received: 02/04/25
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15
Analytical Date: 02/04/25 21:47
Analyst: JMB

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	1.00	--	ND	2.46	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505816
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505816-07
Client ID: CAN 4258 SHELF 54
Sample Location:

Date Collected: 02/03/25 18:00
Date Received: 02/04/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
Xylenes, total	ND	0.600	--	ND	0.869	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,2-Dichloroethene (total)	ND	1.00	--	ND	1.00	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505816
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505816-07
Client ID: CAN 4258 SHELF 54
Sample Location:

Date Collected: 02/03/25 18:00
Date Received: 02/04/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505816
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505816-07
Client ID: CAN 4258 SHELF 54
Sample Location:

Date Collected: 02/03/25 18:00
Date Received: 02/04/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	0.996	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1



Project Name: BATCH CANISTER CERTIFICATION**Lab Number:** L2505816**Project Number:** CANISTER QC BAT**Report Date:** 02/26/25**Air Canister Certification Results**

Lab ID: L2505816-07

Date Collected: 02/03/25 18:00

Client ID: CAN 4258 SHELF 54

Date Received: 02/04/25

Sample Location:

Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								

Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds				
No Tentatively Identified Compounds				

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	107		60-140
Bromochloromethane	109		60-140
chlorobenzene-d5	108		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505816
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505816-07
Client ID: CAN 4258 SHELF 54
Sample Location:

Date Collected: 02/03/25 18:00
Date Received: 02/04/25
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15-SIM
Analytical Date: 02/04/25 21:47
Analyst: JMB

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acrolein	ND	0.050	--	ND	0.115	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505816
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505816-07
Client ID: CAN 4258 SHELF 54
Sample Location:

Date Collected: 02/03/25 18:00
Date Received: 02/04/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.100	--	ND	0.377	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.100	--	ND	0.518	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1



Project Name: BATCH CANISTER CERTIFICATION**Lab Number:** L2505816**Project Number:** CANISTER QC BAT**Report Date:** 02/26/25**Air Canister Certification Results**

Lab ID: L2505816-07

Date Collected: 02/03/25 18:00

Client ID: CAN 4258 SHELF 54

Date Received: 02/04/25

Sample Location:

Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	114		60-140
bromochloromethane	119		60-140
chlorobenzene-d5	116		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505816
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505816-08
Client ID: CAN 3070 SHELF 41
Sample Location:

Date Collected: 02/04/25 11:00
Date Received: 02/04/25
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15
Analytical Date: 02/04/25 22:25
Analyst: JMB

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	1.00	--	ND	2.46	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505816
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505816-08
Client ID: CAN 3070 SHELF 41
Sample Location:

Date Collected: 02/04/25 11:00
Date Received: 02/04/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
Xylenes, total	ND	0.600	--	ND	0.869	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,2-Dichloroethene (total)	ND	1.00	--	ND	1.00	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505816
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505816-08
Client ID: CAN 3070 SHELF 41
Sample Location:

Date Collected: 02/04/25 11:00
Date Received: 02/04/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505816
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505816-08
Client ID: CAN 3070 SHELF 41
Sample Location:

Date Collected: 02/04/25 11:00
Date Received: 02/04/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	0.996	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1



Project Name: BATCH CANISTER CERTIFICATION**Lab Number:** L2505816**Project Number:** CANISTER QC BAT**Report Date:** 02/26/25**Air Canister Certification Results**

Lab ID: L2505816-08

Date Collected: 02/04/25 11:00

Client ID: CAN 3070 SHELF 41

Date Received: 02/04/25

Sample Location:

Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								

Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds				

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	107		60-140
Bromochloromethane	110		60-140
chlorobenzene-d5	108		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505816
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505816-08
Client ID: CAN 3070 SHELF 41
Sample Location:

Date Collected: 02/04/25 11:00
Date Received: 02/04/25
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15-SIM
Analytical Date: 02/04/25 22:25
Analyst: JMB

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acrolein	ND	0.050	--	ND	0.115	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2505816
Report Date: 02/26/25

Air Canister Certification Results

Lab ID: L2505816-08
Client ID: CAN 3070 SHELF 41
Sample Location:

Date Collected: 02/04/25 11:00
Date Received: 02/04/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.100	--	ND	0.377	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.100	--	ND	0.518	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1



Project Name: BATCH CANISTER CERTIFICATION**Lab Number:** L2505816**Project Number:** CANISTER QC BAT**Report Date:** 02/26/25**Air Canister Certification Results**

Lab ID: L2505816-08

Date Collected: 02/04/25 11:00

Client ID: CAN 3070 SHELF 41

Date Received: 02/04/25

Sample Location:

Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	116		60-140
bromochloromethane	119		60-140
chlorobenzene-d5	116		60-140



Project Name: TUFTS STREET**Lab Number:** L2507890**Project Number:** 045163**Report Date:** 02/26/25**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information**Cooler** **Custody Seal**

NA Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2507890-01A	Canister - 6L (Batch Certified)	NA	NA			Y	Present/Intact		CANCELLED(),CLEAN-FEE()
L2507890-02A	Canister - 6L (Batch Certified)	NA	NA			Y	Present/Intact		MCP-TO15-SIM(30)
L2507890-03A	Canister - 6L (Batch Certified)	NA	NA			Y	Present/Intact		MCP-TO15-SIM(30)
L2507890-04A	Canister - 6L (Batch Certified)	NA	NA			Y	Present/Intact		MCP-TO15-SIM(30)
L2507890-05A	Canister - 2.7L (Batch Certified)	NA	NA			Y	Present/Intact		MCP-TO15-SIM(30)
L2507890-06A	Canister - 2.7L (Batch Certified)	NA	NA			Y	Present/Intact		MCP-TO15-SIM(30)

Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2507890
Report Date: 02/26/25

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2507890
Report Date: 02/26/25

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2507890
Report Date: 02/26/25

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: TUFTS STREET**Lab Number:** L2507890**Project Number:** 045163**Report Date:** 02/26/25

REFERENCES

- 101 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air (EPA/625/R-96/010b:January 1999) with QC Requirements & Performance Standards for the Analysis of TO-15 under the Massachusetts Contingency Plan, WSC-CAM-IXB, July 2010.

LIMITATION OF LIABILITIES

Pace Analytical Services performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Pace Analytical Services shall be to re-perform the work at it's own expense. In no event shall Pace Analytical Services be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Pace Analytical Services.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Pace Analytical Services LLCFacility: **Northeast**Department: **Quality Assurance**Title: **Certificate/Approval Program Summary**ID No.: **17873**

Revision 27

Published Date: 01/24/2025

Page 1 of 2

Certification Information**The following analytes are not included in our Primary NELAP Scope of Accreditation:****Westborough Facility – 8 Walkup Dr. Westborough, MA 01581****EPA 624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 625.1:** alpha-Terpineol**EPA 8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048****SM 2540D:** TSS.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

MADEP-APH.**Nonpotable Water:** EPA RSK-175 Dissolved Gases**Biological Tissue Matrix:** EPA 3050B**Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048****EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Nonpotable Water: EPA RSK-175 Dissolved Gases**The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:****Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048****Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)****The following analytes are included in our Massachusetts DEP Scope of Accreditation****Westborough Facility – 8 Walkup Dr. Westborough, MA 01581****Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables).**Microbiology:** SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.**Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.** **EPA 522, EPA 537.1.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1 Hg.****SM2340B**

Pace Analytical Services LLCID No.:**17873**Facility: **Northeast**

Revision 27

Department: **Quality Assurance**

Published Date: 01/24/2025

Title: **Certificate/Approval Program Summary**

Page 2 of 2

Certification IDs:**Westborough Facility – 8 Walkup Dr. Westborough, MA 01581**

CT PH-0826, IL 200077, IN C-MA-03, KY JY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 3090, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

ANAB/DoD L2474, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.

CHAIN OF CUSTODY

up / 1/17/25
0140

Tufts Street IA/SV Analyte List

- Vinyl chloride
- 1,1-Dichloroethene
- trans-1,2-Dichloroethane
- 1,1-Dichloroethane
- cis-1,2-Dichloroethene
- 1,1,1-Trichloroethane
- Trichloroethene
- 1,1,2-Trichloroethane
- Tetrachloroethene
- 1,1,2,2-Tetrachloroethane



ANALYTICAL REPORT

Lab Number:	L2509911
Client:	GEI Consultants 400 Unicorn Park Drive Woburn, MA 01801
ATTN:	Chris Coner
Phone:	(781) 721-4000
Project Name:	TUFTS ST
Project Number:	045163
Report Date:	03/10/25

The original project report/data package is held by Pace Analytical Services. This report/data package is paginated and should be reproduced only in its entirety. Pace Analytical Services holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: NH ELAP (2249).

120 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.pacelabs.com



Project Name: TUFTS ST**Project Number:** 045163**Lab Number:** L2509911**Report Date:** 03/10/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2509911-01	045163-103WASH-F1	AIR	SOMERVILLE, MA	02/21/25 10:15	02/21/25

Project Name: TUFTS ST

Lab Number: L2509911

Project Number: 045163

Report Date: 03/10/25

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	NO
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES
A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO
For any questions answered "No", please refer to the case narrative section on the following page(s).		

Please note that sample matrix information is located in the Sample Results section of this report.



Project Name: TUFTS ST
Project Number: 045163

Lab Number: L2509911
Report Date: 03/10/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Pace Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Pace's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Pace Project Manager and made arrangements for Pace to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: TUFTS ST
Project Number: 045163

Lab Number: L2509911
Report Date: 03/10/25

Case Narrative (continued)

MCP Related Narratives

Canisters were released from the laboratory on February 13, 2025. The canister certification data is provided as an addendum.

MCP Volatile Organics in Air

In reference to questions E b/I:

All samples were analyzed for a subset of the MCP compounds per the Chain of Custody.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Christopher J. Anderson

Title: Technical Director/Representative

Date: 03/10/25

QC OUTLIER SUMMARY REPORT

Project Name: TUFTS ST**Lab Number:** L2509911**Project Number:** 045163**Report Date:** 03/10/25

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
--------	-----------------------	--------	-----------	---------	------------------	---------------	--------------------	-------------------------

There are no QC Outliers associated with this report.

AIR

Project Name: TUFTS ST**Project Number:** 045163**Lab Number:** L2509911**Report Date:** 03/10/25**SAMPLE RESULTS**

Lab ID: L2509911-01
 Client ID: 045163-103WASH-F1
 Sample Location: SOMERVILLE, MA

Date Collected: 02/21/25 10:15
 Date Received: 02/21/25
 Field Prep: Not Specified

Sample Depth:
 Matrix: Air
 Analytical Method: 101,TO-15-SIM
 Analytical Date: 03/04/25 07:40
 Analyst: TPH

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
MCP Volatile Organics in Air by SIM - Mansfield Air Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	87		60-140
bromochloromethane	91		60-140
chlorobenzene-d5	89		60-140



Project Name: TUFTS ST

Lab Number: L2509911

Project Number: 045163

Report Date: 03/10/25

Method Blank Analysis Batch Quality Control

Analytical Method: 101,TO-15-SIM

Analytical Date: 03/03/25 18:09

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
MCP Volatile Organics in Air by SIM - Mansfield Air Lab for sample(s): 01 Batch: WG2036173-4								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1



Lab Control Sample Analysis **Batch Quality Control**

Project Name: TUFTS ST

Project Number: 045163

Lab Number: L2509911

Report Date: 03/10/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics in Air by SIM - Mansfield Air Lab Associated sample(s): 01 Batch: WG2036173-3								
Vinyl chloride	79		-		70-130	-		
1,1-Dichloroethene	80		-		70-130	-		
trans-1,2-Dichloroethene	83		-		70-130	-		
1,1-Dichloroethane	76		-		70-130	-		
cis-1,2-Dichloroethene	76		-		70-130	-		
1,1,1-Trichloroethane	82		-		70-130	-		
Trichloroethene	86		-		70-130	-		
1,1,2-Trichloroethane	86		-		70-130	-		
Tetrachloroethene	86		-		70-130	-		
1,1,2,2-Tetrachloroethane	93		-		70-130	-		

Project Name: TUFTS ST
Project Number: 045163

Serial_No:03102517:56
Lab Number: L2509911
Report Date: 03/10/25

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt	Flow Controler Leak Chk	Flow Out mL/min	Flow In	% RPD
L2509911-01	045163-103WASH-F1	01381	Flow 5	02/13/25	505312		-	-	-	Pass	3.0	3.1	3
L2509911-01	045163-103WASH-F1	3943	6.0L Can	02/13/25	505312	L2507313-08	Pass	-29.7	-5.5	-	-	-	-



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2507313
Report Date: 03/10/25

Air Canister Certification Results

Lab ID: L2507313-08
Client ID: CAN 2465 SHELF 43
Sample Location:

Date Collected: 02/11/25 10:00
Date Received: 02/11/25
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15
Analytical Date: 02/12/25 01:30
Analyst: KJD

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	1.00	--	ND	2.46	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2507313
Report Date: 03/10/25

Air Canister Certification Results

Lab ID: L2507313-08
Client ID: CAN 2465 SHELF 43
Sample Location:

Date Collected: 02/11/25 10:00
Date Received: 02/11/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
Xylenes, total	ND	0.600	--	ND	0.869	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,2-Dichloroethene (total)	ND	1.00	--	ND	1.00	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2507313
Report Date: 03/10/25

Air Canister Certification Results

Lab ID: L2507313-08
Client ID: CAN 2465 SHELF 43
Sample Location:

Date Collected: 02/11/25 10:00
Date Received: 02/11/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1



Project Name: BATCH CANISTER CERTIFICATION**Lab Number:** L2507313**Project Number:** CANISTER QC BAT**Report Date:** 03/10/25**Air Canister Certification Results**

Lab ID: L2507313-08

Date Collected: 02/11/25 10:00

Client ID: CAN 2465 SHELF 43

Date Received: 02/11/25

Sample Location:

Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	0.996	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1



Project Name: BATCH CANISTER CERTIFICATION**Lab Number:** L2507313**Project Number:** CANISTER QC BAT**Report Date:** 03/10/25**Air Canister Certification Results**

Lab ID: L2507313-08

Date Collected: 02/11/25 10:00

Client ID: CAN 2465 SHELF 43

Date Received: 02/11/25

Sample Location:

Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Air Lab								

Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds				

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	89		60-140
Bromochloromethane	96		60-140
chlorobenzene-d5	92		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2507313
Report Date: 03/10/25

Air Canister Certification Results

Lab ID: L2507313-08
Client ID: CAN 2465 SHELF 43
Sample Location:

Date Collected: 02/11/25 10:00
Date Received: 02/11/25
Field Prep: Not Specified

Sample Depth:

Matrix: Air
Analytical Method: 48,TO-15-SIM
Analytical Date: 02/12/25 01:30
Analyst: KJD

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acrolein	ND	0.050	--	ND	0.115	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L2507313
Report Date: 03/10/25

Air Canister Certification Results

Lab ID: L2507313-08
Client ID: CAN 2465 SHELF 43
Sample Location:

Date Collected: 02/11/25 10:00
Date Received: 02/11/25
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.100	--	ND	0.377	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.100	--	ND	0.518	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1



Project Name: BATCH CANISTER CERTIFICATION**Lab Number:** L2507313**Project Number:** CANISTER QC BAT**Report Date:** 03/10/25**Air Canister Certification Results**

Lab ID: L2507313-08

Date Collected: 02/11/25 10:00

Client ID: CAN 2465 SHELF 43

Date Received: 02/11/25

Sample Location:

Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Air Lab								
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	89		60-140
bromochloromethane	97		60-140
chlorobenzene-d5	93		60-140



Project Name: TUFTS ST
Project Number: 045163

Serial_No:03102517:56
Lab Number: L2509911
Report Date: 03/10/25

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
NA	Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2509911-01A	Canister - 6L (Batch Certified)	NA	NA			Y	Absent		MCP-TO15-SIM(30)

Project Name: TUFTS ST
Project Number: 045163

Lab Number: L2509911
Report Date: 03/10/25

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: TUFTS ST
Project Number: 045163

Lab Number: L2509911
Report Date: 03/10/25

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: TUFTS ST
Project Number: 045163

Lab Number: L2509911
Report Date: 03/10/25

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: TUFTS ST**Lab Number:** L2509911**Project Number:** 045163**Report Date:** 03/10/25

REFERENCES

- 101 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air (EPA/625/R-96/010b:January 1999) with QC Requirements & Performance Standards for the Analysis of TO-15 under the Massachusetts Contingency Plan, WSC-CAM-IXB, July 2010.

LIMITATION OF LIABILITIES

Pace Analytical Services performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Pace Analytical Services shall be to re-perform the work at it's own expense. In no event shall Pace Analytical Services be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Pace Analytical Services.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Pace Analytical Services LLCFacility: **Northeast**Department: **Quality Assurance**Title: **Certificate/Approval Program Summary**ID No.: **17873**

Revision 27

Published Date: 01/24/2025

Page 1 of 2

Certification Information**The following analytes are not included in our Primary NELAP Scope of Accreditation:****Westborough Facility – 8 Walkup Dr. Westborough, MA 01581****EPA 624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 625.1:** alpha-Terpineol**EPA 8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048****SM 2540D:** TSS.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

MADEP-APH.**Nonpotable Water:** EPA RSK-175 Dissolved Gases**Biological Tissue Matrix:** EPA 3050B**Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048****EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Nonpotable Water: EPA RSK-175 Dissolved Gases**The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:****Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048****Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)****The following analytes are included in our Massachusetts DEP Scope of Accreditation****Westborough Facility – 8 Walkup Dr. Westborough, MA 01581****Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables).**Microbiology:** SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.**Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.** **EPA 522, EPA 537.1.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1 Hg.****SM2340B**

Pace Analytical Services LLCID No.:**17873**Facility: **Northeast**

Revision 27

Department: **Quality Assurance**

Published Date: 01/24/2025

Title: **Certificate/Approval Program Summary**

Page 2 of 2

Certification IDs:**Westborough Facility – 8 Walkup Dr. Westborough, MA 01581**

CT PH-0826, IL 200077, IN C-MA-03, KY JY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 3090, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

ANAB/DoD L2474, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.

CHAIN OF CUSTODY

Client Information

☐ These samples have been previously analyzed by Alpha

Project-Specific Target Compound List: 

PAGE 2 OF 2

ALPHA Job #: L2509911

ALPHA Quote

Date Due: _____ Time: _____

Report to: (if different than Project Manager)

☒ Same as Client info	PO #:
---	-------

State/Fed	Program	Res / Comm
-----------	---------	------------

To-15
O-15 SIM
APH
Fixed Gases
Surfactants & Mercaptans by To-15

• **PtDx**

09911-01	045163-103Wash-FI	2/21/25	1032	1015	-30.75	-6.73	14	JWG	6L	3943	01381	X	see attached list of analytes
----------	-------------------	---------	------	------	--------	-------	----	-----	----	------	-------	---	-------------------------------

Container Type

Date/Time:

2/21/25	11:05
---------	-------

2-21-25 1

Rec: Lual 1 Nth 2/21/25 2100

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Indoor Air Sampling Analyte List

- 1,1-Dichloroethane
- 1,1-Dichloroethylene
- trans-1,2-Dichloroethylene
- cis-1,2-Dichloroethylene
- 1,1,1-Trichloroethane
- 1,1,2,2-Tetrachloroethane
- 1,1,2-Trichloroethane
- Tetrachloroethylene
- Trichloroethylene
- Vinyl Chloride



ANALYTICAL REPORT

Lab Number:	L2513286
Client:	GEI Consultants 400 Unicorn Park Drive Woburn, MA 01801
ATTN:	Chris Coner
Phone:	(781) 721-4000
Project Name:	TUFTS STREET
Project Number:	045163
Report Date:	03/17/25

The original project report/data package is held by Pace Analytical Services. This report/data package is paginated and should be reproduced only in its entirety. Pace Analytical Services holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930A1).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2513286
Report Date: 03/17/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2513286-01	045163-MW111R	WATER	SOMERVILLE, MA	03/07/25 14:15	03/10/25

Project Name: TUFTS STREET

Lab Number: L2513286

Project Number: 045163

Report Date: 03/17/25

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES
A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	YES
For any questions answered "No", please refer to the case narrative section on the following page(s).		

Please note that sample matrix information is located in the Sample Results section of this report.



Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2513286
Report Date: 03/17/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Pace Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Pace's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Pace Project Manager and made arrangements for Pace to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2513286
Report Date: 03/17/25

Case Narrative (continued)

MCP Related Narratives

Volatile Organics

In reference to question H:

L2513286-01: Initial Calibration did not meet:

Lowest Calibration Standard Minimum Response Factor: 1,4-dioxane (0.0019)

Average Response Factor: 1,4-dioxane

Verification: dichlorodifluoromethane (136%)

L2513286-01: The associated continuing calibration standard is outside the acceptance criteria for three compounds; however, it is within overall method allowances. Associated results are considered to be biased high if the %D is negative and biased low if the %D is positive. A copy of the continuing calibration standard is included as an addendum to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 03/17/25

QC OUTLIER SUMMARY REPORT

Project Name: TUFTS STREET**Lab Number:** L2513286**Project Number:** 045163**Report Date:** 03/17/25

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
--------	-----------------------	--------	-----------	---------	------------------	---------------	--------------------	-------------------------

There are no QC Outliers associated with this report.

ORGANICS

VOLATILES

Project Name: TUFTS STREET**Lab Number:** L2513286**Project Number:** 045163**Report Date:** 03/17/25**SAMPLE RESULTS**

Lab ID: L2513286-01
 Client ID: 045163-MW111R
 Sample Location: SOMERVILLE, MA

Date Collected: 03/07/25 14:15
 Date Received: 03/10/25
 Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 141,8260D

Analytical Date: 03/13/25 12:13

Analyst: MCM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	74		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.40	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.40	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.40	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1



Project Name: TUFTS STREET

Lab Number: L2513286

Project Number: 045163

Report Date: 03/17/25

SAMPLE RESULTS

Lab ID: L2513286-01
 Client ID: 045163-MW111R
 Sample Location: SOMERVILLE, MA

Date Collected: 03/07/25 14:15
 Date Received: 03/10/25
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	5.3		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	7.0		ug/l	1.0	--	1
1,2-Dichloroethene, Total	7.0		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	8.0		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
Methyl ethyl ketone	ND		ug/l	5.0	--	1
Methyl isobutyl ketone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1



Project Name: TUFTS STREET**Lab Number:** L2513286**Project Number:** 045163**Report Date:** 03/17/25**SAMPLE RESULTS**

Lab ID: L2513286-01
 Client ID: 045163-MW111R
 Sample Location: SOMERVILLE, MA

Date Collected: 03/07/25 14:15
 Date Received: 03/10/25
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Diethyl ether	ND		ug/l	2.0	--	1
Diisopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	105		70-130

Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2513286
Report Date: 03/17/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 141,8260D
 Analytical Date: 03/13/25 07:21
 Analyst: MCM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01 Batch: WG2040411-5					
Methylene chloride	ND		ug/l	2.0	--
1,1-Dichloroethane	ND		ug/l	1.0	--
Chloroform	ND		ug/l	1.0	--
Carbon tetrachloride	ND		ug/l	1.0	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	1.0	--
1,1,2-Trichloroethane	ND		ug/l	1.0	--
Tetrachloroethene	ND		ug/l	1.0	--
Chlorobenzene	ND		ug/l	1.0	--
Trichlorofluoromethane	ND		ug/l	2.0	--
1,2-Dichloroethane	ND		ug/l	1.0	--
1,1,1-Trichloroethane	ND		ug/l	1.0	--
Bromodichloromethane	ND		ug/l	1.0	--
trans-1,3-Dichloropropene	ND		ug/l	0.40	--
cis-1,3-Dichloropropene	ND		ug/l	0.40	--
1,3-Dichloropropene, Total	ND		ug/l	0.40	--
1,1-Dichloropropene	ND		ug/l	2.0	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	1.0	--
Ethylbenzene	ND		ug/l	1.0	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	2.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	2.0	--
1,1-Dichloroethene	ND		ug/l	1.0	--
trans-1,2-Dichloroethene	ND		ug/l	1.0	--
Trichloroethene	ND		ug/l	1.0	--



Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2513286
Report Date: 03/17/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 141,8260D
 Analytical Date: 03/13/25 07:21
 Analyst: MCM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01 Batch: WG2040411-5					
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	2.0	--
p/m-Xylene	ND		ug/l	2.0	--
o-Xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	1.0	--
1,2-Dichloroethene, Total	ND		ug/l	1.0	--
Dibromomethane	ND		ug/l	2.0	--
1,2,3-Trichloropropane	ND		ug/l	2.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	2.0	--
Methyl ethyl ketone	ND		ug/l	5.0	--
Methyl isobutyl ketone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	2.0	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,3-Dichloropropane	ND		ug/l	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--
Bromobenzene	ND		ug/l	2.0	--
n-Butylbenzene	ND		ug/l	2.0	--
sec-Butylbenzene	ND		ug/l	2.0	--
tert-Butylbenzene	ND		ug/l	2.0	--
o-Chlorotoluene	ND		ug/l	2.0	--



Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2513286
Report Date: 03/17/25

Method Blank Analysis Batch Quality Control

Analytical Method: 141,8260D
Analytical Date: 03/13/25 07:21
Analyst: MCM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01 Batch: WG2040411-5					
p-Chlorotoluene	ND		ug/l	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--
Hexachlorobutadiene	ND		ug/l	0.60	--
Isopropylbenzene	ND		ug/l	2.0	--
p-Isopropyltoluene	ND		ug/l	2.0	--
Naphthalene	ND		ug/l	2.0	--
n-Propylbenzene	ND		ug/l	2.0	--
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--
Diethyl ether	ND		ug/l	2.0	--
Diisopropyl Ether	ND		ug/l	2.0	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--
1,4-Dioxane	ND		ug/l	250	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	107		70-130

Lab Control Sample Analysis **Batch Quality Control**

Project Name: TUFTS STREET

Project Number: 045163

Lab Number: L2513286

Report Date: 03/17/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG2040411-3 WG2040411-4								
Methylene chloride	100		100		70-130	0		20
1,1-Dichloroethane	100		100		70-130	0		20
Chloroform	97		100		70-130	3		20
Carbon tetrachloride	100		110		70-130	10		20
1,2-Dichloropropane	100		100		70-130	0		20
Dibromochloromethane	93		93		70-130	0		20
1,1,2-Trichloroethane	97		99		70-130	2		20
Tetrachloroethene	97		97		70-130	0		20
Chlorobenzene	98		98		70-130	0		20
Trichlorofluoromethane	100		110		70-130	10		20
1,2-Dichloroethane	97		100		70-130	3		20
1,1,1-Trichloroethane	100		100		70-130	0		20
Bromodichloromethane	97		100		70-130	3		20
trans-1,3-Dichloropropene	93		95		70-130	2		20
cis-1,3-Dichloropropene	96		97		70-130	1		20
1,1-Dichloropropene	100		100		70-130	0		20
Bromoform	87		89		70-130	2		20
1,1,2,2-Tetrachloroethane	94		92		70-130	2		20
Benzene	99		100		70-130	1		20
Toluene	97		96		70-130	1		20
Ethylbenzene	96		96		70-130	0		20
Chloromethane	100		96		70-130	4		20
Bromomethane	75		76		70-130	1		20

Lab Control Sample Analysis **Batch Quality Control**

Project Name: TUFTS STREET

Project Number: 045163

Lab Number: L2513286

Report Date: 03/17/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG2040411-3 WG2040411-4								
Vinyl chloride	120		120		70-130	0		20
Chloroethane	120		130		70-130	8		20
1,1-Dichloroethene	100		100		70-130	0		20
trans-1,2-Dichloroethene	100		100		70-130	0		20
Trichloroethene	99		99		70-130	0		20
1,2-Dichlorobenzene	95		96		70-130	1		20
1,3-Dichlorobenzene	95		95		70-130	0		20
1,4-Dichlorobenzene	97		96		70-130	1		20
Methyl tert butyl ether	94		97		70-130	3		20
p/m-Xylene	95		95		70-130	0		20
o-Xylene	95		95		70-130	0		20
cis-1,2-Dichloroethene	100		100		70-130	0		20
Dibromomethane	99		100		70-130	1		20
1,2,3-Trichloropropane	91		88		70-130	3		20
Styrene	90		95		70-130	5		20
Dichlorodifluoromethane	130		130		70-130	0		20
Acetone	100		97		70-130	3		20
Carbon disulfide	100		110		70-130	10		20
Methyl ethyl ketone	88		92		70-130	4		20
Methyl isobutyl ketone	90		90		70-130	0		20
2-Hexanone	88		88		70-130	0		20
Bromochloromethane	100		110		70-130	10		20
Tetrahydrofuran	98		92		70-130	6		20

Lab Control Sample Analysis **Batch Quality Control**

Project Name: TUFTS STREET

Project Number: 045163

Lab Number: L2513286

Report Date: 03/17/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG2040411-3 WG2040411-4								
2,2-Dichloropropane	100		96		70-130	4		20
1,2-Dibromoethane	96		97		70-130	1		20
1,3-Dichloropropane	94		95		70-130	1		20
1,1,1,2-Tetrachloroethane	92		93		70-130	1		20
Bromobenzene	96		95		70-130	1		20
n-Butylbenzene	98		96		70-130	2		20
sec-Butylbenzene	97		95		70-130	2		20
tert-Butylbenzene	96		94		70-130	2		20
o-Chlorotoluene	94		94		70-130	0		20
p-Chlorotoluene	96		94		70-130	2		20
1,2-Dibromo-3-chloropropane	87		91		70-130	4		20
Hexachlorobutadiene	93		92		70-130	1		20
Isopropylbenzene	95		94		70-130	1		20
p-Isopropyltoluene	97		95		70-130	2		20
Naphthalene	94		93		70-130	1		20
n-Propylbenzene	96		94		70-130	2		20
1,2,3-Trichlorobenzene	95		95		70-130	0		20
1,2,4-Trichlorobenzene	95		94		70-130	1		20
1,3,5-Trimethylbenzene	96		95		70-130	1		20
1,2,4-Trimethylbenzene	95		94		70-130	1		20
Diethyl ether	100		99		70-130	1		20
Diisopropyl Ether	96		96		70-130	0		20
Ethyl-Tert-Butyl-Ether	90		92		70-130	2		20

Lab Control Sample Analysis **Batch Quality Control**

Project Name: TUFTS STREET

Project Number: 045163

Lab Number: L2513286

Report Date: 03/17/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG2040411-3 WG2040411-4								
Tertiary-Amyl Methyl Ether	91		94		70-130	3		20
1,4-Dioxane	86		88		70-130	2		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		98		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	98		95		70-130
Dibromofluoromethane	104		103		70-130

Project Name: TUFTS STREET
Project Number: 045163

Serial_No:03172519:30
Lab Number: L2513286
Report Date: 03/17/25

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2513286-01A	Vial HCl preserved	A	NA		3.9	Y	Absent		MCP-8260-21(14)
L2513286-01B	Vial HCl preserved	A	NA		3.9	Y	Absent		MCP-8260-21(14)
L2513286-01C	Vial HCl preserved	A	NA		3.9	Y	Absent		MCP-8260-21(14)

Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2513286
Report Date: 03/17/25

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
	Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2513286
Report Date: 03/17/25

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: TUFTS STREET
Project Number: 045163

Lab Number: L2513286
Report Date: 03/17/25

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: TUFTS STREET**Lab Number:** L2513286**Project Number:** 045163**Report Date:** 03/17/25

REFERENCES

- 141 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA and IIB, November 2021.

LIMITATION OF LIABILITIES

Pace Analytical Services performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Pace Analytical Services shall be to re-perform the work at its own expense. In no event shall Pace Analytical Services be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Pace Analytical Services.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Pace Analytical Services LLCFacility: **Northeast**Department: **Quality Assurance**Title: **Certificate/Approval Program Summary**ID No.: **17873**

Revision 27

Published Date: 01/24/2025

Page 1 of 2

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581**EPA 624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 625.1:** alpha-Terpineol**EPA 8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048****SM 2540D:** TSS.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

MADEP-APH.**Nonpotable Water:** EPA RSK-175 Dissolved Gases**Biological Tissue Matrix:** EPA 3050B**Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048****EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Nonpotable Water: EPA RSK-175 Dissolved Gases

The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048**Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)**

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581**Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables).**Microbiology:** SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.**Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg. EPA 522, EPA 537.1.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1 Hg.****SM2340B**

Pace Analytical Services LLCID No.:**17873**Facility: **Northeast**

Revision 27

Department: **Quality Assurance**

Published Date: 01/24/2025

Title: **Certificate/Approval Program Summary**

Page 2 of 2

Certification IDs:**Westborough Facility – 8 Walkup Dr. Westborough, MA 01581**

CT PH-0826, IL 200077, IN C-MA-03, KY JY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 3090, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

ANAB/DoD L2474, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.

Chain-of-Custody Record				Laboratory: <u>Pace</u>				Laboratory Job # <u>L2513286</u> (Lab use only)					
 GEI Consultants 400 Unicorn Park Drive Woburn, MA 01801 PH: 781.721.4000				Project Information								Page 1 of 1	
				Project Name: <u>Tufts Street</u>				Project Location: <u>Somerville, MA</u>					
				Project Number: <u>045163</u>				Project Manager: <u>Chris Coner</u>				Sample Handling	
				Send Report to: <u>Molly Forrest, Chris Coner</u> labdata@geiconsultants.com				Preservative HCl Analysis VOCs 8260 					
MCP PRESUMPTIVE CERTAINTY AND MCP ANALYTICAL METHODS REQUIRED: YES NO								Samples Field Filtered YES NO NA Sampled Shipped With Ice YES NO					
STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS State/Federal Program: MA 401WQC Other NH RI CT NY ME MA MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if GW-1 is required.													
Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler(s) Initials	Sample Specific Remarks						
		Date	Time										
<u>13275-1</u>	<u>045163-MW111R</u>	<u>3/3/25</u>	<u>14:15</u>	<u>GW</u>	<u>3</u>	<u>NMT</u>							
Relinquished by sampler: (signature)		Date:	Time:	Received by: (signature)			Turnaround Time (Business days): Standard TAT <u>X</u> 4-Day <u> </u> 3-Day <u> </u> 2-Day <u> </u> 1-Day <u> </u> Other <u> </u>						
1. <u>Nicholas Luoccolo</u>		<u>3/7/25</u>	<u>14:50</u>	1. GEI Sample Fridge									
Relinquished by sampler: (signature)		Date:	Time:	Received by: (signature)			Additional Requirements/Comments/Remarks:						
2. <u>GEI Sample Fridge</u>		<u>3/10/25</u>	<u>1230</u>	2. <u>[Signature]</u>									
Relinquished by: (signature)		Date:	Time:	Received by: (signature)									
3. <u>[Signature]</u>		<u>3/10/25</u>	<u>1230</u>	3. <u>Brian Banni Pace</u>									
Relinquished by: (signature)		Date:	Time:	Received by: (signature)									
4. <u>Brian Banni Pace</u>		<u>3-10-25</u>	<u>1720</u>	4. <u>[Signature]</u>									
Relinquished by: (signature)		Date:	Time:	Received by: (signature)									
5. <u> </u>				5. <u> </u>									

Sample Matrix Abbreviations: SO = Soil GW = Groundwater SW = Surface Water SD = Sediment CO = Concrete PC = Paint Chip CLK = Caulk

Method Blank Summary Form 4 Volatiles

Client : GEI Consultants
Project Name : TUFTS STREET
Lab Sample ID : WG2040411-5
Instrument ID : JACK
Matrix : WATER

Lab Number : L2513286
Project Number : 045163
Lab File ID : J250313A05
Analysis Date : 03/13/25 07:21

Client Sample No.	Lab Sample ID	Analysis Date
WG2040411-3LCS	WG2040411-3	03/13/25 06:02
WG2040411-4LCSD	WG2040411-4	03/13/25 06:28
045163-MW111R	L2513286-01	03/13/25 12:13

Calibration Verification Summary

Form 7

Volatiles

Client : GEI Consultants
 Project Name : TUFTS STREET
 Instrument ID : JACK
 Lab File ID : J250313A02
 Sample No : WG2040411-2
 Channel :

Lab Number : L2513286
 Project Number : 045163
 Calibration Date : 03/13/25 06:02
 Init. Calib. Date(s) : 02/28/25 02/28/25
 Init. Calib. Times : 05:35 08:42

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	89	0
Dichlorodifluoromethane	0.28	0.356	-	-27.1*	20	110	0
Chloromethane	0.294	0.296	-	-0.7	20	89	0
Vinyl chloride	0.352	0.418	-	-18.8	20	102	0
Bromomethane	0.178	0.134	-	24.7*	20	69	0
Chloroethane	0.189	0.236	-	-24.9*	20	108	0
Trichlorofluoromethane	0.411	0.435	-	-5.8	20	91	0
Ethyl ether	0.116	0.119	-	-2.6	20	89	0
1,1-Dichloroethene	0.228	0.237	-	-3.9	20	92	0
Carbon disulfide	0.7	0.735	-	-5	20	93	0
Freon-113	0.246	0.262	-	-6.5	20	94	0
Acrolein	0.041	0.038	-	7.3	20	88	0
Methylene chloride	0.247	0.25	-	-1.2	20	91	0
Acetone	0.077	0.077	-	0	20	93	0
trans-1,2-Dichloroethene	0.247	0.256	-	-3.6	20	90	0
Methyl acetate	0.167	0.149	-	10.8	20	82	0
Methyl tert-butyl ether	0.682	0.638	-	6.5	20	83	0
tert-Butyl alcohol	0.026	0.023	-	11.5	20	68	0
Diisopropyl ether	0.875	0.837	-	4.3	20	86	0
1,1-Dichloroethane	0.492	0.496	-	-0.8	20	89	0
Halothane	0.201	0.204	-	-1.5	20	89	0
Acrylonitrile	0.082	0.081	-	1.2	20	87	0
Ethyl tert-butyl ether	0.785	0.709	-	9.7	20	81	0
Vinyl acetate	0.688	0.628	-	8.7	20	83	0
cis-1,2-Dichloroethene	0.272	0.276	-	-1.5	20	90	0
2,2-Dichloropropane	0.423	0.435	-	-2.8	20	93	0
Bromochloromethane	0.122	0.127	-	-4.1	20	89	0
Cyclohexane	0.51	0.507	-	0.6	20	89	0
Chloroform	0.462	0.449	-	2.8	20	88	0
Ethyl acetate	0.269	0.241	-	10.4	20	79	0
Carbon tetrachloride	0.363	0.372	-	-2.5	20	89	0
Tetrahydrofuran	0.095	0.093	-	2.1	20	84	0
Dibromofluoromethane	0.264	0.276	-	-4.5	20	92	0
1,1,1-Trichloroethane	0.408	0.42	-	-2.9	20	91	0
2-Butanone	0.121	0.106	-	12.4	20	80	0
1,1-Dichloropropene	0.335	0.339	-	-1.2	20	88	0
Benzene	1.011	0.999	-	1.2	20	89	0
tert-Amyl methyl ether	0.688	0.626	-	9	20	80	0
1,2-Dichloroethane-d4	0.324	0.318	-	1.9	20	88	0
1,2-Dichloroethane	0.355	0.344	-	3.1	20	86	0
Methyl cyclohexane	0.47	0.466	-	0.9	20	91	0
Trichloroethene	0.271	0.269	-	0.7	20	87	0
Dibromomethane	0.153	0.152	-	0.7	20	85	0

* Value outside of QC limits.



Calibration Verification Summary

Form 7

Volatiles

Client : GEI Consultants
 Project Name : TUFTS STREET
 Instrument ID : JACK
 Lab File ID : J250313A02
 Sample No : WG2040411-2
 Channel :

Lab Number : L2513286
 Project Number : 045163
 Calibration Date : 03/13/25 06:02
 Init. Calib. Date(s) : 02/28/25 02/28/25
 Init. Calib. Times : 05:35 08:42

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,2-Dichloropropane	0.262	0.274	-	-4.6	20	87	0
2-Chloroethyl vinyl ether	0.159	0.128	-	19.5	20	67	0
Bromodichloromethane	0.344	0.334	-	2.9	20	83	0
1,4-Dioxane	0.00217	0.00185*	-	14.7	20	77	0
cis-1,3-Dichloropropene	0.409	0.393	-	3.9	20	81	0
Chlorobenzene-d5	1	1	-	0	20	89	0
Toluene-d8	1.318	1.322	-	-0.3	20	90	0
Toluene	0.882	0.859	-	2.6	20	87	0
4-Methyl-2-pentanone	0.125	0.113	-	9.6	20	77	0
Tetrachloroethene	0.411	0.397	-	3.4	20	86	0
trans-1,3-Dichloropropene	0.495	0.461	-	6.9	20	79	0
Ethyl methacrylate	0.424	0.382	-	9.9	20	76	0
1,1,2-Trichloroethane	0.262	0.253	-	3.4	20	80	0
Chlorodibromomethane	0.365	0.341	-	6.6	20	79	0
1,3-Dichloropropane	0.486	0.455	-	6.4	20	80	0
1,2-Dibromoethane	0.295	0.282	-	4.4	20	80	0
2-Hexanone	0.255	0.224	-	12.2	20	73	0
Chlorobenzene	0.973	0.957	-	1.6	20	84	0
Ethylbenzene	1.752	1.69	-	3.5	20	85	0
1,1,1,2-Tetrachloroethane	0.357	0.329	-	7.8	20	79	0
p/m Xylene	0.685	0.663	-	3.2	20	86	0
o Xylene	0.658	0.64	-	2.7	20	86	0
Styrene	1.121	1.038	-	7.4	20	81	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	90	0
Bromoform	0.441	0.385	-	12.7	20	72	0
Isopropylbenzene	3.009	2.873	-	4.5	20	83	0
4-Bromofluorobenzene	0.855	0.84	-	1.8	20	89	0
Bromobenzene	0.72	0.694	-	3.6	20	81	0
n-Propylbenzene	3.645	3.508	-	3.8	20	84	0
1,4-Dichlorobutane	0.953	0.841	-	11.8	20	77	0
1,1,2,2-Tetrachloroethane	0.7	0.66	-	5.7	20	77	0
4-Ethyltoluene	2.97	2.894	-	2.6	20	85	0
2-Chlorotoluene	2.404	2.268	-	5.7	20	83	0
1,3,5-Trimethylbenzene	2.587	2.475	-	4.3	20	85	0
1,2,3-Trichloropropane	0.56	0.51	-	8.9	20	76	0
trans-1,4-Dichloro-2-buten	0.238	0.206	-	13.4	20	71	0
4-Chlorotoluene	2.179	2.096	-	3.8	20	83	0
tert-Butylbenzene	2.151	2.067	-	3.9	20	85	0
1,2,4-Trimethylbenzene	2.516	2.398	-	4.7	20	83	0
sec-Butylbenzene	3.283	3.197	-	2.6	20	86	0
p-Isopropyltoluene	2.792	2.71	-	2.9	20	85	0
1,3-Dichlorobenzene	1.47	1.396	-	5	20	82	0
1,4-Dichlorobenzene	1.47	1.421	-	3.3	20	83	0

* Value outside of QC limits.

Calibration Verification Summary

Form 7

Volatiles

Client : GEI Consultants
 Project Name : TUFTS STREET
 Instrument ID : JACK
 Lab File ID : J250313A02
 Sample No : WG2040411-2
 Channel :

Lab Number : L2513286
 Project Number : 045163
 Calibration Date : 03/13/25 06:02
 Init. Calib. Date(s) : 02/28/25 02/28/25
 Init. Calib. Times : 05:35 08:42

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
p-Diethylbenzene	1.637	1.592	-	2.7	20	85	0
n-Butylbenzene	2.502	2.461	-	1.6	20	88	0
1,2-Dichlorobenzene	1.362	1.295	-	4.9	20	81	0
1,2,4,5-Tetramethylbenzene	2.513	2.315	-	7.9	20	82	0
1,2-Dibromo-3-chloropropan	0.133	0.116	-	12.8	20	75	0
1,3,5-Trichlorobenzene	1.072	1.026	-	4.3	20	84	0
Hexachlorobutadiene	0.458	0.428	-	6.6	20	86	0
1,2,4-Trichlorobenzene	0.948	0.905	-	4.5	20	85	0
Naphthalene	2.388	2.251	-	5.7	20	82	0
1,2,3-Trichlorobenzene	0.868	0.824	-	5.1	20	83	0

* Value outside of QC limits.



Appendix E Method 3 Risk Characterization

Method 3 Human Health Risk Characterization

This evaluation was performed in accordance with the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000). The objective of this evaluation is to characterize the risks of harm to human health associated with the Property. This evaluation was conducted consistent with the requirements of a Method 3 Risk Characterization using conservative exposure estimates (310 CMR 40.0900).

E.1 Quantitative Estimates of Exposure

We estimated the average daily exposure to each COC by a receptor for each exposure pathway. Average daily exposures were estimated over an appropriate time period for non-cancer effects and/or for cancer effects. Doses for ingestion and dermal pathways are presented in this risk characterization as a daily dose rate per unit body weight (milligrams per kilogram per day [mg/kg-day]).

The “Average Daily Dose” (ADD) and “Lifetime Average Daily Dose” [(L)ADD] are the general parameters used to quantify exposure doses for the ingestion and dermal pathways in risk assessments. The ADD is used as a standard measure for characterizing long-term non-carcinogenic effects. The (L)ADD is averaged over a 70-year human lifetime to estimate potential carcinogenic risks. The “Average Daily Exposure” (ADE) and “Lifetime Average Daily Exposure” [(L)ADE] are the general parameters used to quantify exposure doses for the inhalation pathway. The ADE is used as a standard measure for characterizing long-term non-carcinogenic effects. The (L)ADE is averaged over a 70-year human lifetime to estimate potential carcinogenic risks.

Equations for exposure routes are the same for all receptors. However, the exposure assumptions used to describe contact with COCs for each receptor are different. Receptor-specific exposure assumptions are presented in Tables RC-6 through RC-8. These factors are based on guidance from MassDEP (1995, 2002c, 2002d, 2002e, 2002f, 2004a), the U.S. Environmental Protection Agency (EPA) (1997, 2004a), and other published sources of information. In the absence of adequate data to characterize particular exposure parameters, we used professional judgment. Tables RC-9 through RC-12 provide compound-specific parameters used in the following equations to quantify exposure, which are further described in Section E.2.

E.1.1 Dermal Contact with Groundwater

Unlike other pathways of exposure that rely on the (L)ADD, the calculations for dermal contact with water is a 2-step process outlined by EPA (EPA, 2004). The first calculation is the development of DA_{event} , or absorbed dose per event, (expressed in $\text{mg}/\text{cm}^2\text{-event}$). The second calculation is based on the DA_{event} and is the dermal absorbed dose (DAD). Equations have been developed for both organic and inorganic compounds. These equations are used in risk assessment to account for exposures to COCs in water used for showering but are modified in this assessment to reflect dermal contact with groundwater.

The calculation of DA_{event} includes chemical specific variables based on the physical properties of the chemical (e.g., permeability coefficient) and the steady state absorption of chemicals across dermal boundaries. The calculation of DA_{event} also incorporates the duration of the exposure event (t_{event}). For the construction worker, the t_{event} was assumed to be 0.5 hours. This corresponds to the construction worker having a wet area of exposed skin (face, hands, forearms, and feet) for 0.5 hours of the 8-hour workday at the point of exposure. Additional information on steady-state characteristics of chemical absorption can be found in EPA's "Supplemental Guidance for Dermal Risk Assessment" (EPA, 2004).

If the $t_{event} \leq t^*$, then DA_{event} is calculated by the following equation:

$$DA_{event} = 2FA \times K_p \times EPC_{gw} \times \sqrt{\frac{6 \times \tau_{event} \times t_{event}}{\pi}}$$

Where:

FA	=	Fraction Absorbed
K_p	=	Permeability Constant (unitless)
EPC_{gw}	=	Concentration in groundwater (mg/cm ³)
τ_{event}	=	Lag time per event (hr/event)
t_{event}	=	Event duration (hr)
π	=	Pi

Where $t_{event} > t^*$ then DA_{event} is calculated by the following equation:

$$DA_{event} = FA \times K_p \times EPC_{gw} \times \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$$

Where:

FA	=	Fraction Absorbed
K_p	=	Permeability constant (unitless)
EPC_{gw}	=	Concentration in groundwater (mg/cm ³)
τ_{event}	=	Lag time per event (hr/event)
t_{event}	=	Event duration (hr)
B	=	Dimensionless ratio of the permeability coefficient relative to its permeability coefficient across the viable epidermis (ve) (unitless)

Values used in these equations are presented in Table RC-9. Values for τ_{event} , t^* , and B were calculated using formulas provided by EPA (EPA, 2004a). Sources of values for permeability constant (K_p) included

the EPA guidance and MassDEP. The following equations were used for B, τ_{event} , and t^* (Equations A.1, A.4, and A.5, EPA, 2004a):

$$B = K_p \frac{\sqrt{MW}}{2.6} \quad \tau_{event} = 0.105 \times 10^{(0.0056 MW)} \quad t^* = 2.4 \tau_{event}$$

The t^* values for B values greater than 0.6 were calculated using a different formula (Equation A.6, EPA, 2004a):

$$t^* = 6 \tau_{event} (b - \sqrt{b^2 - c^2})$$

For the inorganic COCs identified in groundwater, the following equation was used to determine DA_{event} (EPA, 2004):

$$DA_{event} = K_p \times EPC_{gw} \times t_{event}$$

Where:

K_p = Permeability coefficient (cm/hr)

EPC_{gw} = Groundwater concentration (mg/cm³)

t_{event} = Event duration (hr)

Values used in this equation are presented in Table RC-9. Sources of values for permeability constant (K_p) included the EPA guidance and MassDEP.

Once the DA_{event} was determined, the DAD (mg/kg-day) was calculated by the following equation:

$$DAD = \frac{DA_{event} \times EF \times ED \times EP \times SA_{gw}}{BW \times AT_N}$$

Where:

EF = Event Frequency (events/day)

ED = Exposure Duration (days/event)

EP = Duration of Exposure Period (days)

SA_{gw} = Skin Surface Area available for contact with water (square centimeters [cm²])

BW = Body Weight (kg)

ATN/C = Averaging Time (days)

non-carcinogens (N) = EP (days)

carcinogens (C) = 25,550 days

E.1.2 Inhalation of Indoor Air and Excavation Air

The (L)ADE/ADE calculated for the inhalation of volatiles in indoor air, and air within an excavation by future construction workers, is described by the following equation:

$$(L)ADE / ADE_A = \frac{EPC_{air} \times EF \times ED \times EP \times CF_{air}}{AT_N / AT_C}$$

Where:

ADE _A	=	Average Daily Exposure for excavation (mg/m ³)
EPC _{air}	=	Exposure Point Concentration in excavation (mg/m ³)
ED	=	Exposure Duration (hr/day)
EF	=	Exposure Frequency (days/year)
EP	=	Exposure Period (years)
CF _{air}	=	Conversion Factor (0.001 mg/μg)
AT _N	=	Averaging Time (days) = EP (days)
AT _C	=	Averaging Time (days) (carcinogens) = 25,550 days

E.2 Toxicity Assessment

The Toxicity Assessment or Dose-Response Assessment is a process that results in a quantitative estimate or index of toxicity for each COC. For carcinogens, this index is the cancer slope factor (CSF) or unit risk factor (URF). For non-carcinogens, it is the reference dose (RfD) or reference concentration (RfC). There are three categories of dose-response information:

- Toxicity values associated with threshold (non-carcinogenic) health effects.
- Toxicity values associated with carcinogenicity, either from human epidemiological studies or laboratory studies.
- Relative absorption factors (RAFs) that are used to relate the toxicity values identified in the literature to the exposure pathways of concern.

Toxicity values are available in many on-line databases and publications. The primary sources for toxicity values used in this evaluation include the following:

- MassDEP, Development of MCP Risk-Based Levels for Soil and Groundwater, toxicity spreadsheet, (<https://www.mass.gov/doc/mcp-numerical-standards-derivation/download>); this spreadsheet includes the RAFs and recommended dose-response values (i.e., cancer slope factors, reference doses) for most of the COCs (MassDEP, 2024).
- MassDEP Shortforms: Method 3 Human Health Risk Assessment (MassDEP, 2024).
- The Integrated Risk Information System (IRIS) from the EPA (<http://www.epa.gov/iris>) (EPA, 2025).

E.2.1 Carcinogenic Health Effects

CSFs (for ingestion and dermal exposures) or URFs (for inhalation exposure) are used to predict the potential number of excess cancers that will arise in response to lifetime exposure to a contaminant. These values are predominantly based on animal bioassay data, although human epidemiological data are preferred and used when available.

In evaluating contaminants for carcinogenicity, EPA developed a two-part assessment involving a weight-of-evidence classification and a quantitative determination of carcinogenic potency (i.e., slope factors and unit risks). The weight-of-evidence classification reflects available data, adequacy of studies, types of studies, and observed responses.

The following classifications are used (EPA, 1986):

- Group A: human carcinogens
- Group B1: probable human carcinogens (limited human data)
- Group B2: probable human carcinogens (sufficient evidence in animals; limited or no evidence in humans)
- Group C: possible human carcinogens (limited evidence in animals; limited or no evidence in humans)
- Group D: not classifiable as to human carcinogenicity
- Group E: evidence of non-carcinogenicity in humans

CSFs and/or URFs have typically been developed for Group A, B1, and B2 carcinogens and some Group C carcinogens. Toxicity summaries for carcinogenic COCs are available on IRIS (<http://www.epa.gov/iris>) (EPA, 2025). CSFs and URFs for COCs at the Site are presented in Table RC-10 along with the following information:

- Source of toxicity value, i.e., IRIS, MassDEP, etc.
- Study type: how the compound was administered
- Weight-of-evidence: EPA's classification system for carcinogens
- Test animal: animal species on which the study is based
- Cancer type: location and/or type of tumor identified in the study

E.2.2 Noncarcinogenic Health Effects

Noncarcinogenic effects are assessed by comparing the estimated average daily exposure to the acceptable daily dose, referred to as the RfD or in the case of inhalation exposure, the RfC. The RfD is an estimate (with about an order of magnitude uncertainty) of a daily exposure to a human population, including sensitive subgroups, that is likely to be without an appreciable risk of deleterious effects during a portion of their lifetime, in the case of a subchronic RfD, or during a whole lifetime, in the case of a

chronic RfD (EPA, 1989). The RfC is an estimate of the inhalation exposure concentration (with about an order of magnitude uncertainty) to which a human population, including sensitive subgroups, could be exposed without an appreciable risk of deleterious effects during a lifetime. Toxicity summaries for non-carcinogenic COCs are available on IRIS (<http://www.epa.gov/iris>) (EPA, 2024). Subchronic and chronic RfDs and RfCs used in this risk characterization are presented in Tables RC-11 and RC-12 along with the following information:

- Toxicity value
- Source of toxicity value
- Study type
- Confidence level
- Critical effect: target organ and toxic effect on which the dose-response value is based.
- Test animal
- Uncertainty or modifying factors: factors listed by the agency establishing the toxicity value.

Subchronic RfDs and RfCs were used in this risk characterization, where available, to evaluate short-term exposure scenarios identified for the current and future receptors at the Property. These toxicity values were derived based on potential non-carcinogenic effects associated with exposure durations ranging from a few weeks to seven years (EPA, 1989). In the absence of subchronic toxicity values, we used chronic toxicity values. However, the use of chronic toxicity values to assess short-term exposure likely overestimates subchronic hazards to receptors of concern.

E.2.3 Route-to-Route Extrapolation of Slope Factors and Reference Doses

CSFs and RfDs for the dermal route of exposure have not been developed by the EPA. As a result, oral CSFs and RfDs are typically used to evaluate dermal exposures to contaminants (EPA, 1989). Following the absorption of contaminants via the oral or dermal routes, their distribution, metabolism, and elimination patterns (biokinetics) are usually assumed independent of the route of absorption. However, in order to use oral toxicity values (i.e., extrapolate toxicological effects from the oral route to the dermal route), it is necessary to adjust the estimated dermal absorbed dose to account for differences in a compound's absorption between the oral and dermal routes of exposure. However, if the critical effect is at the point of contact, extrapolation of toxicological effects from the oral route to the dermal route is inappropriate.

Compound-specific relative absorption factors or RAFs are used to account for differences in the absorption of a COC under assumed exposure conditions at a site relative to the absorption of the COC under the experimental conditions upon which a toxicity value is based (MassDEP, 1995).

The RAFs were calculated using the following equation:

$$\text{RAF} = \frac{\text{Absorption Efficiency}_{\text{Site Route}} / \text{Medium Exposure}}{\text{Absorption Efficiency}_{\text{Study Route}} / \text{Medium Exposure}}$$

RAFs for the water exposure pathways are presented in Tables RC-10 through RC-12. RAFs for the inhalation exposure pathway were conservatively assumed to be 1.0.

E.3 Human Health Risk Characterization

The characterization of risk is the final step in the risk assessment process. In this step, the toxicity and exposure assessments are combined into quantitative estimates of risk to each human receptor of concern from exposure to COCs at a site.

Human health risk from exposure to COCs was estimated separately for carcinogenic and non-carcinogenic COCs:

- To characterize potential carcinogenic effects, lifetime average daily doses or exposures are compared to compound-specific CSFs or URFs. Specifically, the estimated lifetime average daily dose or exposure is multiplied by the CSF or URF. Risk is expressed as the probability of that exposure resulting in an excess incidence of cancer; that is, the occurrence of more cancers than would normally be expected in the exposed population.
- To characterize potential non-carcinogenic effects, average daily doses were compared to compound-specific RfDs or RfCs. Specifically, the estimated average daily dose or exposure was divided by the RfD or RfC. This ratio is called the Hazard Index.

E.3.1 Cumulative Cancer Risk Evaluation

Carcinogenic risk from ingestion (oral), dermal, and inhalation routes of exposure were calculated using the following equation:

$$ELCR = [(\sum ((L)ADD_{ing,derm,inhGI}) \times CSF) + (ADE \times URF)]$$

Where: ELCR = Excess Lifetime Cancer Risk
 (L)ADD = Lifetime Average Daily Dose
 CSF = Cancer Slope Factor
 ADE = Average Daily Exposure
 URF = Inhalation Unit Risk Factor

E.3.2 Cumulative Non-cancer Risk Evaluation

Non-cancer hazards from ingestion (oral), dermal and inhalation routes of exposure were calculated using the following equation:

$$HQ = \frac{ADD(DAD)}{RfD} \quad \text{or} \quad HQ = \frac{ADE}{RfC}$$

Where: ADD = Average Daily Dose (mg/kg-day)

DAD	=	Dermal Absorbed Dose (mg/kg-day)
RfD	=	Reference Dose (mg/kg-day)
ADE	=	Average Daily Exposure (mg/m ³)
RfC	=	Reference Concentration (mg/m ³)

Where the ADD/ADE estimated from exposure to a COC exceeds the RfD/RfC, respectively, the Hazard Quotient (HQ) exceeds one. This typically is considered a threshold requiring further evaluation since it indicates that exposure could be higher than the “no-effect” dose represented by the RfD/RfC. Where the HQ does not exceed one, the ADD/ADE estimated from exposure to a COC is not greater than the RfD/RfC, indicating that the likelihood of realizing a non-cancer effect from that COC is negligible.

To summarize potential non-cancer risks for multiple COCs across complete exposure pathways, and across receptors, HQs were summed. The resulting Hazard Index (HI) serves as a conservative summary of pathway and receptor risks, since summing the individual COC HQs incorporates the assumption that their risks are all additive, when, in fact, different COCs are expected to act through different mechanisms and on different target organs. The overall HIs are useful for rapidly excluding pathways or receptors with negligible potential for non-cancer effects such as when all the COC HQs added together do not exceed an HI of one.

Tables RC-13 through RC-22 provide calculations of Excess Lifetime Cancer Risks (ELCRs) and HIs for each receptor by exposure route and within each exposure point.

E.3.3 Cumulative Cancer/Non-cancer Risk Limits

The MCP specifies numerical cancer and non-cancer risk limits that are used to identify a condition of significant risk at a site. Conditions at the Property pose NSR of harm to health if cumulative cancer and/or non-cancer risks for a receptor from all applicable exposure pathways are below the MCP cancer and non-cancer risk limits.

According to the MCP (310 CMR 40.0993[6]), the Cumulative Cancer Risk Limit is a one-in-one hundred thousand (1×10^{-5}) ELCR. When the ELCR is below 1×10^{-5} , there is no significant cancer risk. We compared cumulative cancer risk estimates for each receptor at each exposure point to the MCP cancer risk limit in Table RC-23.

According to the MCP (310 CMR 40.0993[6]), the Cumulative Non-cancer Risk Limit is a HI of one. When the HI for a receptor is below one, there is no significant non-cancer risk. We compared cumulative non-cancer risk estimates for each receptor at each exposure point to the MCP non-cancer risk limit in Table RC-23.

E.4 Human Health Risk Characterization Summary

The results for the human health risk characterization are summarized in Table RC-23.

E.5 Uncertainty Analysis

In accordance with the MCP, this assessment includes a discussion of potential sources of uncertainty associated with the risk characterization, including data gaps in toxicological or exposure assessment information as well as conservative assumptions or scientific judgments used to bridge these data gaps. Numerical estimates of risk to human health, public welfare, or the environment presented in this report are only as good as the data and information upon which they are based. General sources of variability and uncertainty in the risk characterization include measurement errors in the site assessment process, variability in natural system and human behavior, limitations in model simplifications and assumptions, limitations in literature-derived data, and professional judgment used to select parameters.

A discussion of the uncertainty and conservatism associated with the risk characterization is provided in this section to facilitate an understanding of the strengths and limitations of the risk characterization.

E.5.1 Uncertainties in Hazard Identification

The number and distribution of samples collected at and in the vicinity of the Property are considered reasonable for the COCs. For groundwater exposure points, average or maximum concentrations were identified for EPCs; whereas for indoor air exposure points, maximum concentrations were identified for EPCs. Excavation air EPCs for construction worker were based on average groundwater concentrations and excavation air EPCs for utility worker were based on maximum groundwater concentrations. This approach of utilizing maximum concentrations for EPCs likely overestimates the risk for exposure to these media.

E.5.2 Uncertainties in Exposure Assessment

Conservative exposure parameters are incorporated in the exposure assessment. Health-protective exposure assumptions based on either Site-specific information or conservative default values provided in MassDEP guidance were used to quantitatively evaluate potential risks.

With respect to determining EPCs, we assumed that the concentrations of chemicals in the medium evaluated would remain constant over time. Depending on the properties of the chemical and the medium in which it was detected, this assumption may overestimate risks because chemicals may degrade over time or migrate to other media.

E.5.3 Uncertainties in Toxicity Assessment

There are many uncertainties inherent in the toxicity values used in the dose-response assessment. For example, short term, homogeneous animal studies, using very high concentrations, are used to predict human health effects resulting from low dose exposures over long exposure periods. Conservative safety factors are incorporated in the toxicity values to counter this uncertainty. Compounding conservative safety factors may result in the overestimation of risk.

E.5.4 Carcinogenic Toxicity Assessment Assumptions

Carcinogenic COCs have been evaluated by the EPA using a weight-of-evidence carcinogenicity evaluation criteria, and some have been placed in Group A (human carcinogens) or Group B (probable human carcinogens), based on sufficient data in humans, or sufficient data in animals and insufficient data in humans, respectively (EPA, 1986). There is uncertainty introduced in the assessment where COCs are currently under review by EPA to change their weight-of-evidence classifications.

E.5.5 Non-carcinogenic Toxicity Assessment Assumptions

Key assumptions used in assessing the likelihood of non-carcinogenic effects are that threshold doses exist below which various non-carcinogenic effects do not occur and that the occurrence or absence of non-carcinogenic effects can be extrapolated between species and occasionally between routes of exposure over varying exposure durations. The threshold assumption appears to be sound for most non-carcinogens based on reasonably good fits of experimental data to dose-response curves.

The effects observed in one species or by one route of exposure may not occur in another species or by another route, or they may occur at a higher or lower dose due to differences in the biokinetics of a compound in different species. The uncertainty in these assumptions is considered in the development of RfDs using safety or uncertainty factors. These factors reflect uncertainty associated with species-to-species extrapolation and include safety factors to protect sensitive individuals. In addition to uncertainty factors, a modifying factor is applied to reflect a quantitative professional assessment of additional uncertainties in the critical study and in the entire database for the chemical not explicitly addressed by other uncertainty factors.

The uncertainty factors and modifying factors incorporated in the RfDs and RfCs are conservative (health protective) in nature. Therefore, the use of these toxicity values may overestimate the potential for non-carcinogenic effects for a given exposure route.

E.5.6 Route-to-Route Extrapolation of Slope Factors and Reference Doses

Route-to-route extrapolation of toxicity values adds an additional source of uncertainty to the risk assessment. Such extrapolation may result in either under- or over-estimation of the true risks for the extrapolated route. Although this practice adds uncertainty to the risk evaluation, it is preferable to omitting exposure to a COC by a route for which no toxicity value is available thus avoiding the potential underestimation of risk.

E.5.7 Uncertainties in Risk Characterization

The estimation of ELCR assumes that an increased risk of cancer from exposure to a chemical is directly proportional to the chemical intake averaged over a lifetime with no threshold or (non-zero) dose below which carcinogenic effects do not occur. While continuing to recommend this approach, EPA recognizes that certain carcinogenic chemicals may have threshold levels similar to non-carcinogenic chemicals (EPA, 2005b). In addition, cumulative cancer and non-cancer risk estimates assume risks are additive,

which may under-estimate or over-estimate risk given that some chemical effects may not be additive, while others may have synergistic effects.

TCE has been determined to be carcinogenic and cause mutagenic effects during early life exposure. EPA recommends the use of age-dependent adjustment factors (ADAFs) in conjunction with URFs for inhalation when early life exposure is being assessed. Assessment of exposure to TCE in indoor air by residential receptors did not include consideration of mutagenic effects in the GEI workbooks. A comparison of ELCRs generated in the risk assessment for residential exposure to TCE in indoor air versus those calculated using the 2024 MassDEP shortform for indoor air yielded lower cancer risk results indicating ELCRs for TCE exposure in indoor air presented in the risk characterization are likely underestimated. Individual risk estimates for TCE exposure to indoor air at 103 Washington Street ranged from 1.5E-6 using GEI workbooks to 2.2E-6 using the shortform for current exposure and from 9E-7 (GEI workbook) to 1E-6 (shortform) for future exposure. However, ELCRs calculated using the MassDEP shortform did not result in cumulative risk estimates that exceed the allowable cancer risk limit under the MCP.

E.6 References

Code of Massachusetts Regulations (2014). Massachusetts Contingency Plan, 310 CMR 40.0000 effective June 20.

EPA (1986). Guidelines for Carcinogenic Risk Assessment, Federal Register 51:33992-34012.

EPA (1989). Risk Assessment Guidance for Superfund, Human Health Evaluation Manual (Parts A and C), Interim Final, Office of Emergency and Remedial Response, EPA/540/1-89/002. Available at http://www.epa.gov/oswer/riskassessment/ragsa/pdf/rags-vol1-pta_complete.pdf.

EPA (2004). Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final. Office of Superfund Remediation and Technology Innovation. EPA/540/R/99/005. Available from <http://www.epa.gov/oswer/riskassessment/ragse>.

EPA (2005). Guidelines for Carcinogen Risk Assessment. Risk Assessment Forum. EPA/630/P-03/001B, March.

EPA (2025). Integrated Risk Information System on-line database, <http://www.epa.gov/iris>.

MassDEP (1995). Guidance for Disposal Site Risk Characterization, Interim Final Policy, BWSC/ORS-95-141.

MassDEP (2002a). "Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil, Technical Update," Massachusetts Department of Environmental Protection.

MassDEP (2002b). "Characterizing Risks Posed by Petroleum Contaminated Sites: Implementation of the DEP VPH/EPH Approach," Massachusetts Department of Environmental Protection, Policy No. WCS-02-411.

MassDEP (2002c). "Calculation of an Enhanced Soil Ingestion Rate, Draft Technical Update," Massachusetts Department of Environmental Protection.

MassDEP (2002d). "Characterization of Risks Due to Inhalation of Particulates by Construction Workers, Draft Technical Update," Massachusetts Department of Environmental Protection.

MassDEP (2002e). "Weighted Skin-Soil Adherence Factors, Draft Technical Update," Massachusetts Department of Environmental Protection.

MassDEP (2003). "FINAL, Updated Petroleum Hydrocarbon Fraction Toxicity Values for the VPH/EPH/APH Methodology," Massachusetts Department of Environmental Protection, Office of Research and Standards, November.

MassDEP (2008). "Characterization of Risks Due to Inhalation of Particulates by Construction Workers," Massachusetts Department of Environmental Protection.

MassDEP (2024). "Development of MCP Risk-Based Levels for Soil and Groundwater," toxicity spreadsheet, Massachusetts Department of Environmental Protection.

**Table RC-1. Summary Statistics for Soil
Method 3 Risk Characterization
50 Tufts Street Properties - 103 Washington Street
Somerville, Massachusetts**

Analyte	Number of Detections	Number of Samples	Detection Frequency (%)	Maximum Detected Concentration (mg/kg)	MassDEP Background Level in Natural Soil (mg/kg)	Contaminant of Concern (Y/N)	EPC 0-15' (mg/kg)	M3CL
VOCs								
Naphthalene ^(a)	1	10	10%	0.44	0.5	N	-	10,000
M,p-Xylenes	1	10	10%	0.71	NS	Y	0.7	10,000
cis-1,2-Dichloroethene	1	1	100%	0.012	NS	Y	0.0	5,000
Tetrachloroethene	1	1	100%	0.19	NS	Y	0.2	8,000
Trichloroethene	1	1	100%	0.09	NS	Y	0.1	700
VPH								
C9-10 Aromatics	1	9	11%	26	NS	Y	26	5,000
C5-C8 Aliphatics	1	9	11%	41	NS	Y	41	5,000
C9-C12 Aliphatics	1	9	11%	63	NS	Y	63	20,000
EPH								
C19-C36 Aliphatics	1	1	100%	72	NS	Y	72	20,000
C11-C22 Aromatics	1	1	100%	49	NS	Y	49	10,000

General Notes:

1. Only results for detected compounds are reported here. For a complete list of analytes see the laboratory data sheets.
2. mg/kg = milligrams per kilogram.
3. EPC = Exposure Point Concentration.
4. M3CL = Method 3 Ceiling Limit.

Footnotes

- ^(a) The maximum detected concentration of naphthalene is below the natural background standard, therefore, it is not considered a COC in soil.

**Table RC-2. Summary Statistics for Groundwater
Method 3 Risk Characterization
50 Tufts Street Properties - 103 Washington Street
Somerville, Massachusetts**

	Number of Detections	Number of Samples	Detection Frequency (%)	Maximum Concentration Detected (µg/L)	Average Concentration (µg/L)	Contaminant of Concern (Y/N)	EPC (µg/L)	M3CL
VOCs								
Acetone	2	15	13%	47	21.8	Y	22	100,000
Benzene	1	17	6%	12	2.3	Y	2	100,000
2-Butanone (MEK)	1	15	7%	8.5	18.4	Y	18.4	100,000
1,1-Dichloroethane	10	12	83%	48	23.0	Y	23	10,000
1,1-Dichloroethylene	3	12	25%	12	5.7	Y	6	100,000
cis-1,2-Dichloroethylene	12	15	80%	180	85.2	Y	85	100,000
Ethylbenzene	1	17	6%	63	6.8	Y	7	100,000
Methyl tert-butyl ether	3	17	18%	9.8	7.0	Y	7.0	100,000
Naphthalene	1	17	6%	69	10.2	Y	10	100,000
Tetrachloroethylene (PCE)	14	15	93%	1700	867.4	Y	867	100,000
Toluene	1	17	6%	4.3	3.3	Y	3.3	100,000
Trichloroethylene (TCE)	13	15	87%	220	109.8	Y	110	50,000
Vinyl chloride	1	12	8%	1.6	4.3	Y	4.3	100,000
Total Xylene	1	17	6%	58.8	9.5	Y	9.5	100,000
VPH								
C5-C8 Aliphatics	1	3	33%	920	340	Y	340	100,000
C9-C10 Aromatics	1	3	33%	840	313.3	Y	313	100,000
C9-C12 Aliphatics	1	3	33%	1300	466.7	Y	467	100,000
PAHs								
2-Methylnaphthalene	1	2	50%	14	7	Y	7	100,000
Benz(a)anthracene	1	2	50%	0.09	0.1	Y	0.05	10,000
Benzo(a)pyrene	1	2	50%	0.09	0.1	Y	0.05	5,000
Benzo(b)fluoranthene	1	2	50%	0.17	0.1	Y	0.09	4,000
Benzo(g,h,i)perylene	1	2	50%	0.16	0.1	Y	0.105	500
Benzo(k)fluoranthene	1	2	50%	0.12	0.1	Y	0.065	1,000
Chrysene	1	2	50%	0.18	0.1	Y	0.095	700
Dibenz(a,h)anthracene	1	2	50%	0.05	0.028	Y	0.0275	10,000
Fluoranthene	1	2	50%	0.15	0.1	Y	0.1	2,000
Indeno(1,2,3-cd)pyrene	1	2	50%	0.13	0.1	Y	0.07	1,000
Phenanthrene	1	2	50%	0.17	0.1	Y	0.1025	100,000
Pyrene	1	2	50%	0.23	0.1	Y	0.14	700
Metals Dissolved								
Barium	1	1	100%	840	840	Y	840	100,000
Selenium	1	1	100%	13	13	Y	13	500

General Notes:

1. Only results for detected compounds are reported here. For a complete list of analytes see the laboratory data sheets.
2. µg/L = micrograms per liter.
3. EPC = Exposure Point Concentration.
4. M3CL = Method 3 Ceiling Limit.

Table RC-3. Sub-Slab Soil Vapor Data Summary Statistics
Method 3 Risk Characterization
50 Tufts Street Properties - 103 Washington Street
Somerville, Massachusetts

			103 Washington Street (Residential) Sub-Slab Soil Vapor Data Collected Between May 2023 and February 2025					
Analyte	Residential Sub-Slab Screening Levels (µg/m ³)	Commercial Sub-Slab Screening Levels (µg/m ³)	Detects	Sample Number	Detection Frequency	Contaminant of Concern (Y/N)	Average Concentration	MDC
VOCs								
1,1-Dichloroethane	56	50000	1	10	10%	Y	0.05	0.125
1,1-Dichloroethylene	56	12000	1	10	10%	Y	0.05	0.107
cis-1,2-Dichloroethylene	56	370	7	10	70%	Y	6.61	19.2
trans-1,2-Dichloroethylene	56	3700	8	10	80%	Y	2.35	7.41
Tetrachloroethylene (PCE)	98	290	10	10	100%	Y	59.68	189
1,1,1-Trichloroethane	210	310000	5	10	50%	Y	0.12	0.278
Trichloroethylene (TCE)	28	120	9	10	90%	Y	34.7	130

General Notes:

1. All units in µg/m³ = micrograms per cubic meter.
2. Analytes detected above the laboratory reporting limit are reported here. For a complete list of analytes see the laboratory data sheets.
3. MDC = Maximum Detected Concentration
4. Sub-Slab Soil Vapor Screening Levels are cited from the Massachusetts Department of Environmental Protection Vapor Intrusion Guidance WSC#16-435, issued October 2016.
5. Results in bold exceed the applicable Residential Sub-Slab Soil Vapor Screening Levels.

Table RC-4. Indoor Air Data Summary Statistics
Method 3 Risk Characterization
50 Tufts Street Properties - 103 Washington Street
Somerville, Massachusetts

Residential Indoor Air Data			103 Washington Street (Basement) Indoor Air Data Collected Between July 2023 and February 2025 ^(a)				103 Washington Street (1st Floor) Indoor Air Data Collected Between May 2023 and February 2025 ^(b)					103 Washington Street (2nd Floor) Indoor Air Data Collected Between December 2024 and February 2025 ^(c)				
Analyte	Residential Threshold Values (µg/m ³)	Commercial Threshold Values (µg/m ³)	Detects	Sample Number	Detection Frequency	MDC	Detects	Sample Number	Detection Frequency	Contaminant of Concern (Y/N)	MDC	Detects	Sample Number	Detection Frequency	Contaminant of Concern (Y/N)	MDC
VOCs																
cis-1,2-Dichloroethylene	0.8	5.3	1	4	25%	0.599	1	5	20%	Y	0.107	0	4	0%	N	---
trans-1,2-Dichloroethylene	0.8	53	1	4	25%	6.5	2	5	40%	Y	0.852	0	4	0%	N	---
Tetrachloroethylene (PCE)	1.4	4.1	4	4	100%	2.28	3	5	60%	Y	0.692	4	4	100%	Y	0.312
Trichloroethylene (TCE)	0.4	1.8	1	4	25%	0.919	1	5	20%	Y	0.204	0	4	0%	N	---

- General Notes:**
- 1. All units in µg/m3 = micrograms per cubic meter.
 - 2. Only analytes detected in at least one indoor air sample are presented.
 - 3. MDC = Maximum Detected Concentration
 - 4. Threshold Values are cited from the Massachusetts Department of Environmental Protection Vapor Intrusion Guidance WSC#16-435, issued October 2016.
 - 5. Results in bold exceed the applicable Residential Threshold Values.

Footnotes:

^(a) The basement is not an occupied space.

^(b) The first floor is used for commercial purposes only.

^(c) The second floor is used for residential purposes.

Table RC-5. Indoor Air Exposure Point Concentration Summary
Method 3 Risk Characterization
50 Tufts Street Properties - 103 Washington Street
Somerville, Massachusetts

Chemical of Concern	MADEP Indoor Air Residential Threshold Values ($\mu\text{g}/\text{m}^3$)	MADEP Indoor Air Commercial Threshold Values ($\mu\text{g}/\text{m}^3$)	Current Indoor Air EPC ($\mu\text{g}/\text{m}^3$) ^(a)	Future Indoor Air EPC ($\mu\text{g}/\text{m}^3$) ^(b)
COCs				
1,1-Dichloroethane			---	0.00070
1,1-Dichloroethylene	0.8	180	-	0.00066
cis-1,2-Dichloroethylene	0.8	5.3	0.599	0.094
trans-1,2-Dichloroethylene	0.8	53	6.5	0.034
Tetrachloroethylene (PCE)	1.4	4.1	2.28	0.85
1,1,1-Trichloroethane	3	4400	-	0.0017
Trichloroethylene (TCE)	0.4	1.8	0.919	0.50

General Notes:

1. Analytes detected above the laboratory reporting limit are reported here. For a complete list of analytes see the laboratory data sheets.
2. $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter.
3. Threshold Values are cited from "Vapor Intrusion Guidance WSC#16-435" from the Massachusetts Department of Environmental Protection dated October 2016.
4. Bolded values exceed the Residential Threshold Values

Footnotes:

- (a) Current indoor air EPCs for 103 Washington Street are conservatively based on the maximum detected concentrations detected from the basement, first floor, or second floor. The maximum detected concentrations can be found on Table RC-4.
- (b) Future indoor air EPCs for 103 Washington Street based on average detected sub-slab soil vapor concentrations divided by default attenuation factor of 70. The average detected sub-slab soil vapor concentrations can be found in Table RC-3.

Table RC-23. Summary of Human Health Risks
Method 3 Risk Characterization
50 Tufts Street Properties - 103 Washington Street
Somerville, Massachusetts

Receptor			Hazard Index (HI)					Excess Lifetime Cancer Risk (ELCR)				
			Soil	Groundwater	Indoor Air	Excavation Air	Cumulative HI	Soil	Groundwater	Indoor Air	Excavation Air	Cumulative ELCR
Site Wide	Resident Current	Subchronic Chronic	0.005 0.02	--	0.6 0.7	--	0.6 0.7	3.E-09	--	5.E-06	--	5.E-06
	Resident Future	Subchronic Chronic	0.005 0.02	--	0.3 0.3	--	0.3 0.3	3.E-09	--	2.E-06	--	2.E-06
	Construction Worker Future	Subchronic	0.002	0.1	--	0.1	0.3	1.E-10	8.E-08	--	3.E-08	1.E-07
	Emergency Utility Worker Current / Future	Subchronic	0.000007	0.007	--	0.01	0.02	8.E-13	8.E-09	--	6.E-09	1.E-08
	MCP Cumulative Risk Limit:						1	MCP Cumulative Risk Limit:				1E-05

Notes:

1. "--" = not a complete exposure pathway for that medium.
2. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective March 1, 2024.
3. MassDEP = Massachusetts Department of Environmental Protection.
4. Chronic, non-cancer risk estimates are not calculated for construction and utility workers because the default MassDEP exposure duration is 6 months, which is evaluated as a sub-chronic exposure.
5. A bold and underlined value indicates an exceedance of MassDEP risk limits.

Attachment A – Emergency Utility Worker Trench Air Modeling Parameters

There is no single, well-established trench model widely applied to evaluate inhalation exposure for a construction or emergency utility worker during an excavation. For this Site, GEI evaluated inhalation exposure using a trench model based on a similar approach developed by the Virginia Department of Environmental Quality (VDEQ), Virginia Voluntary Remediation Program (VRP), as incorporated into the 2018 Virginia Unified Risk Assessment Model (VURAM)(<http://www.deq.virginia.gov/Programs/LandProtectionRevitalization/RemediationProgram/VoluntaryRemediationProgram/VRPRiskAssessmentGuidance/Guidance.aspx>). An excerpt from the VDEQ guidance describing the trench model is presented in Attachment A-1.

The VDEQ trench model is based upon a combination of a vadose zone model to estimate volatilization of gases from contaminated groundwater into a trench, and a box model to estimate dispersion of the contaminants from the air inside the trench into the above-ground atmosphere, to estimate the EPC for air in a trench. The trench model equation is presented below:

$$C_{\text{trench}} = C_{\text{gw}} \times \text{VF}$$

Where: C_{trench} = Concentration of contaminant in trench air ($\mu\text{g}/\text{m}^3$)
 C_{gw} = Concentration of contaminant in groundwater ($\mu\text{g}/\text{L}$)
VF = Volatilization factor (see Attachment A)

The VDEQ trench model was developed to evaluate construction worker inhalation exposures during an excavation assumed to be as deep as 15 feet, and this is considered appropriate for MCP risk characterization for the construction worker scenario. However, an excavation to 15 feet is significantly deeper than the 6-foot trench depth recommended by MassDEP for an emergency utility worker. Therefore, for the purposes of MCP risk characterization, and to incorporate conservative assumptions that reflect the types of trenches and holes that emergency utility workers typically encounter on the job, GEI made the following model revisions for an emergency utility worker exposure for this Site:

Percent of Pooled Water at the Base of a Utility Excavation

The default assumption in the VDEQ model when groundwater is less than 15 feet deep is that pooled groundwater will accumulate throughout the entire base of the excavation (pooled fraction = 1) because the 15-foot deep excavation is assumed to intercept the water table. In accordance with Occupational Safety and Health Administration (OSHA) Trenching and Excavation Safety guidelines (OSHA 2226-10R 2015), an employer is prohibited from allowing workers to enter an excavation where water has accumulated or is accumulating unless adequate precautions are taken to protect workers. However, GEI acknowledges that during an emergency utility repair, it is possible for some pooled groundwater to accumulate while setting up

dewatering equipment. Therefore, GEI modified the percent of pooled water at the base of the excavation to 25% (pooled fraction = 0.25).

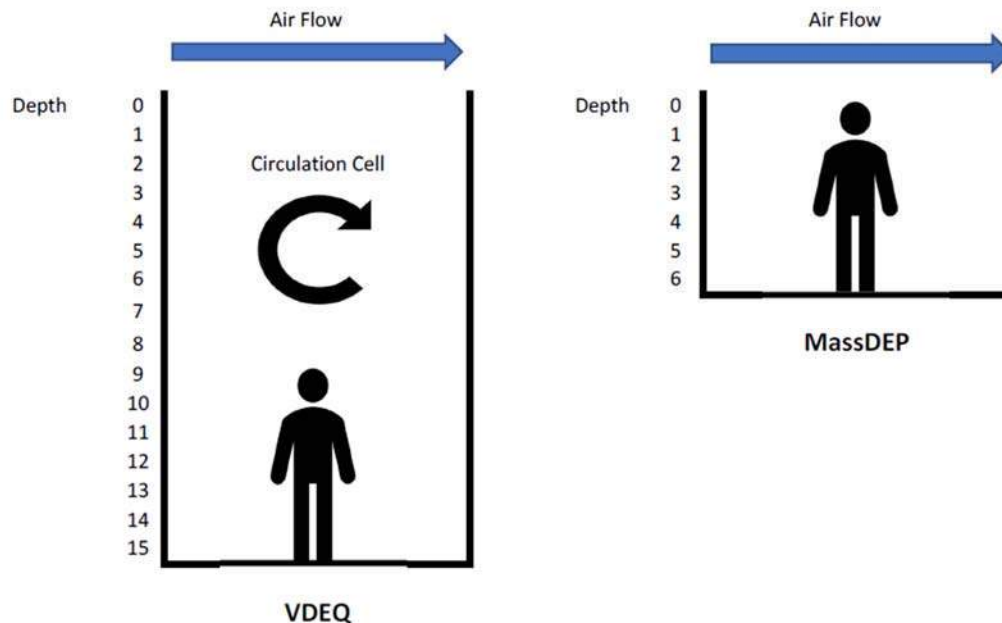
Air Changes per Hour

The OSHA Trenching and Excavation Safety guidelines define a trench as an excavation where the depth is greater than its width. The VDEQ trench model incorporates a default air change per hour (ACH) of 2 if the excavation is deeper than it is wide (i.e., trench width to trench depth ratio is less than 1) or 360 if the trench is wider than it is deep (i.e., trench width to trench depth ratio is greater than 1). The VDEQ guidance provides the following basis for their default ACH value of 2:

“Studies of urban canyons suggest that if the ratio of trench width -- relative to wind direction -- to trench depth is less than or equal to one, a circulation cell or cells will be set up within the trench that limits the degree of gas exchange with the atmosphere. In consultation with the EPA Region III, VDEQ has assumed an air change per hour (ACH) in this case of 2 per hour -- based upon measured ventilation rates of buildings.”

GEI acknowledges that an emergency utility repair is likely to result in an excavation trench with a width to depth ratio less than 1. GEI also acknowledges the potential for reduced air exchange with the surrounding atmosphere within such an excavation trench. However, GEI considers an ACH of 2 to be inappropriate for an emergency utility repair scenario under the MCP. Therefore, GEI calculated an ACH of 66 for an emergency utility excavation trench based on the following:

- The VDEQ trench model was originally developed for a construction excavation as deep as 15 feet. At such a trench depth, GEI acknowledges the potential for a significant reduction in air exchange with the surrounding atmosphere. However, the MCP is explicit that utility installation and repair should be assumed to occur to a depth of 6 feet [310 CMR 40.0924(2)(b)(4)]. A 6-foot excavation is not likely to result in the same reduction in air exchange with the surrounding atmosphere, particularly considering the height of a standing worker in a 6-foot excavation would likely result in a breathing zone that is just below the ground surface. The simple schematic below illustrates this distinction:



- As presented above, the VDEQ basis for selecting an ACH of 2 was in part “*based upon measured ventilation rates of buildings.*” GEI reviewed ACH values for single family residential homes (Reichman et. al 2017), which typically range from 0.5 to 1.5, but often exceed 2. An open air, 6-foot deep utility excavation is likely to have more air exchange with the surrounding atmosphere than a single-family residence. Therefore, GEI considers an ACH of 2 to be inappropriately conservative for evaluating the MCP utility worker scenario. In addition, as noted above, the VDEQ default ACH of 2 was developed to be protective of a deeper construction excavation to a depth of 15 feet.
- GEI peer-reviewed various trench models submitted under the MCP , and many incorporate a wind speed instead of an air exchange rate. Several of the peer-reviewed models incorporate a wind speed of 225 centimeters per second (cm/s), which is equivalent to 5 miles per hour (mph), based on American Standard Testing Method (ASTM) guidance (Standard Guide for Risk-Based Corrective Action [ASTM E2081], and Risk Based Corrective Action Applied at Petroleum Release Sites [ASTM E1739-95]). However, this wind speed assumption is intended for use with an ambient air mixing model at ground surface. Other models simply assume a trench wind speed based on the site-specific average wind speed at ground surface.

As discussed above, GEI acknowledges there may be some reduced air exchange between the trench air and the surrounding atmosphere, and we consider this a shortcoming of other trench models that do not assume a reduced atmospheric air exchange within the trench. GEI reviewed the average wind speeds for all municipalities within Massachusetts (<http://www.usa.com/rank/massachusetts-state--average-wind->

[speed--city-rank.htm](#)). As a conservative measure, we selected the lowest average wind speed in Massachusetts based on this database (10.46 mph for Charlestown, MA), and assumed this wind speed would be reduced by 99% within the 6-foot deep utility trench, resulting in a wind speed of approximately 0.1 mph within the trench. This is considered a suitably conservative, worst case estimate of atmospheric conditions during an emergency utility repair throughout Massachusetts. Based on the assumed emergency utility trench dimensions (3 feet wide, 6 feet deep, 8 feet long), this wind speed converts to an ACH of approximately 66, based on the following calculation:

Calculate volumetric flow using wind speed and trench dimensions:

$$q = WS \times W \times D$$

Where:

q = Volumetric Flow in cubic feet per minute (cfm)

WS = Wind Speed = 0.1 mph = 8.8 feet per minute (fpm)

W = Trench Width = 3 feet (ft)

D = Trench Depth = 6 ft

$$\text{Volumetric Flow} = q = 8.8 \text{ fpm} \times 3 \text{ ft} \times 6 \text{ ft}$$

$$q = 158 \text{ cfm}$$

Calculate volume of utility trench:

$$V = W \times D \times L$$

Where:

V = Trench Volume in cubic feet (ft³)

W = Trench Width = 3 ft

D = Trench Depth = 6 ft

L = Trench Length = 8 ft

$$V = 144 \text{ ft}^3$$

Derive Air Change per Hour (ACH) using volumetric flow rate and trench volume:

$$ACH = 60 \times \left(\frac{q}{V} \right)$$

Where:

q = Volumetric Flow (cfm)

V = Trench Volume (ft³)

60 = conversion factor (min/hr)

$$ACH = 60 \times \left(\frac{158 \text{ cfm}}{144 \text{ ft}^3} \right)$$

$$ACH = 66$$

This ACH is considered sufficiently conservative and representative of the air exchange conditions and breathing zone for a worker within a 6-foot deep utility trench excavation, in accordance with the MCP.

References:

American Standard Testing Method, 2004. Standard Guide for Risk-Based Corrective Action [ASTM E2081]

American Standard Testing Method, 2010. Risk Based Corrective Action Applied at Petroleum Release Sites [ASTM E1739-95]

MassDEP, 2014. “The Massachusetts Contingency Plan (MCP), 310 CMR 40.0000,” April 25, 2014.

Occupational Safety and Health Administration, 2015. Trenching and Excavation Safety [OSHA 2226-10R 2015]

R. Reichman et. al., 2017. US Residential Building Air Exchange Rates: New perspectives to Improve Decisions making at Vapor Intrusion Sites. Environmental Science: Process & Impacts. February 22; 19(2): 87-100

USA.com, 2018. Massachusetts Average Wind Speed City Rank (<http://www.usa.com/rank/massachusetts-state--average-wind-speed--city-rank.htm>)

Appendix 2. Construction Worker Trench Model

There are no well-established models available for estimating migration of volatiles from groundwater into a construction/utility trench. Virginia DEQ recommends the following trench model for groundwater and soil gas. Both models are based on a two-step process: a simple fate and transport equation of a vadose zone model to estimate volatilization of gases (emission flux of VOCs) from contaminated groundwater into the air of the trench. A box model to estimate dispersion of the contaminants from the air inside the trench into the above-ground atmosphere -- to estimate the EPC for air in a construction trench (C_{trench}). Two exposure scenarios are evaluated based on the site-specific depth of the groundwater:

- 1) **Direct Contact:** [groundwater depth less than or equal to 15 feet](#)
This approach is based on groundwater pooling in the trench
- 2) **Indirect Contact:** [groundwater depth greater than 15 feet](#).
This approach is based on contaminant transport through the vadose zone

A2.1 Groundwater

Equations 2-2 or 2-4 are used to calculate the Volatilization Factor (VF), based on the groundwater depth. Once chemical-specific VFs are calculated, [residential groundwater](#) equations and construction worker exposure (trench) defaults are used to compute screening levels or risk/hazard.

IMPORTANT! The appropriate VF replaces the Andelman Volatilization Factor $K=0.5$ (L/m^3) in the residential groundwater inhalation equations.

A2.2 Exposure of Workers to Volatiles in a Construction/Utility Trench

Airborne concentration of a contaminant in a trench can be estimated using Equation 3-1:

$$C_{\text{trench}} = C_{\text{GW}} \times \text{VF} \quad (2-1)$$

Where:

C_{trench}	= concentration of contaminant in the trench	ug/m ³
C_{GW}	= concentration of contaminant in groundwater	ug/L
VF	= volatilization factor (see equations 3-2 and 2-4) (chemical-specific)	L/m ³

Virginia DEQ assumes that a construction project could result in an excavation as deep as 15 feet. At some sites there is a high probability that construction projects with deeper excavations may occur. Contact Virginia DEQ project manager and risk assessor to discuss the appropriate assumptions for site-specific parameters.

If the depth to groundwater at a site [is less than 15 feet](#) DEQ assumes that a worker would encounter groundwater when digging an excavation or a trench. The worker would then have direct exposure to the groundwater. The worker would also be exposed to contaminants in the air inside the trench that would result from volatilization from the groundwater pooling at the bottom of the trench. [Equation 2-4](#) is used to calculate VF.

If groundwater at the site [is greater than 15 feet](#) deep assume that the worker would not have direct contact with the groundwater but could still be exposed to vapors released from the soil in the bottom of the trench. In that case, [Equation 2-2](#) is to calculate VF.



A2.3 Groundwater Greater Than 15 Feet Deep

$$VF = \frac{(H_i \times D_{air} \times AC_{vad}^{3.33} \times A \times F \times 10^{-3} \times 10^4 \times 3600)}{(R \times T \times L_d \times ACH \times V \times Por_{vad}^2)} \quad (2-2)$$

Where:

H_i	= Henry's Law constant for contaminant (RSL table)	atm-m ³ /mol
D_{air}	= diffusion coefficient in air (RSL table)	cm ² /s
AC_{vad}	= volumetric air content in vadose zone soil	cm ³ /cm ³
A	= area of trench	m ²
F	= fraction of floor through which contaminant can enter	Unitless
R	= ideal gas constant	atm-m ³ /mole-K
T	= average system absolute temperature	K
L_d	= distance between trench bottom and groundwater (Equation 2-3)	Cm
ACH	= air changes per hour	h ⁻¹
V	= volume of trench	m ³
Por_{vad}	= total soil porosity in vadose zone	cm ³ /cm ³
10^{-3}	= conversion factor	L/cm ³
10^4	= conversion factor	cm ² /m ²
3600	= conversion factor	s/hr

The value for R is 8.2×10^{-5} . A default value of 298K may be used for the average system absolute temperature.

Studies of urban canyons suggest that if the ratio of trench width -- relative to wind direction -- to trench depth is less than or equal to 1, a circulation cell or cells will be set up within the trench that limits the degree of gas exchange with the atmosphere. In consultation with EPA Region III, Virginia DEQ has assumed an ACH in this case of 2/hr -- based upon measured ventilation rates of buildings.

$$L_d = L_{gw} - D_{trench} \quad (2-3)$$

Where:

L_{gw}	= depth to groundwater	cm
D_{trench}	= depth of trench	cm

For chemicals that are not included in RSL table, the participant should calculate exposure point concentrations for air in a construction trench according to the method described above. References should be provided for the chemical-specific parameters used.



A2.4 Groundwater Less Than or Equal to 15 Feet Deep

Virginia DEQ assumes that the trench would only intercept the groundwater for a few inches since a groundwater pool of more than a few inches would likely require dewatering. Therefore, trench depth should be set to equal the actual depth to groundwater at the site. The default input values and the equations are described in this section.

$$VF = \frac{(K_i \times A \times F \times 10^{-3} \times 10^4 \times 3600)}{(ACH \times V)} \quad (2-4)$$

Where:

K_i	= overall mass transfer coefficient of contaminant (Equation 3-5)	cm/s
A	= area of the trench	m ²
F	= fraction of floor through which contaminant can enter	unitless
ACH	= air changes per hour	h ⁻¹
V	= volume of trench	m ³
10^{-3}	= conversion factor	L/cm ³
10^4	= conversion factor	cm ² /m ²
3600	= conversion factor	s/hr

Studies of urban canyons suggest that if the ratio of trench width -- relative to wind direction -- to trench depth is less than or equal to 1, a circulation cell or cells will be set up within the trench that limits the degree of gas exchange with the atmosphere. In consultation with EPA Region III, DEQ has assumed an ACH in this case of 2/hr -- based upon measured ventilation rates of buildings.

$$K_i = 1 / \{ (1/k_{iL}) + [(R T) / (H_i k_{iG})] \} \quad (2-5)$$

Where:

k_{iL}	= liquid-phase mass transfer coefficient of i (Equation 3-6)	cm/s
R	= ideal gas constant	atm-m ³ /mole-K
T	= average system absolute temperature	K
H_i	= Henry's Law constant of i	atm-m ³ /mol
K_{iG}	= gas-phase mass transfer coefficient of i (Equation 3-7)	cm/s

The value for R is 8.2×10^{-5} . A default value of 298K may be used for the average system absolute temperature.



$$k_{iL} = (MW_{O_2}/MW_i)0.5 \times (T/298) \times k_{L,O_2} \quad (2-6)$$

Where:

k_{iL} = liquid-phase mass transfer coefficient of component i cm/s

MW_{O_2} = molecular weight of O₂ g/mol

MW_i = molecular weight of component i g/mol

k_{L,O_2} = liquid-phase mass transfer coefficient of oxygen at 25°C cm/s

The value of k_{L,O_2} is 0.002 cm/s.

$$k_{iG} = (MW_{H_2O}/MW_i)0.335 \times (T/298)1.005 \times k_{G,H_2O} \quad (3-7)$$

Where:

k_{iG} = gas-phase mass transfer coefficient of component i cm/s

MW_{H_2O} = molecular weight of water g/mol

k_{G,H_2O} = gas-phase mass transfer coefficient of water vapor at 25°C cm/s

The value of k_{G,H_2O} is 0.833 cm/s.

(*Superfund Exposure Assessment Manual*, EPA, Office of Remedial Response, April, 1988.)

